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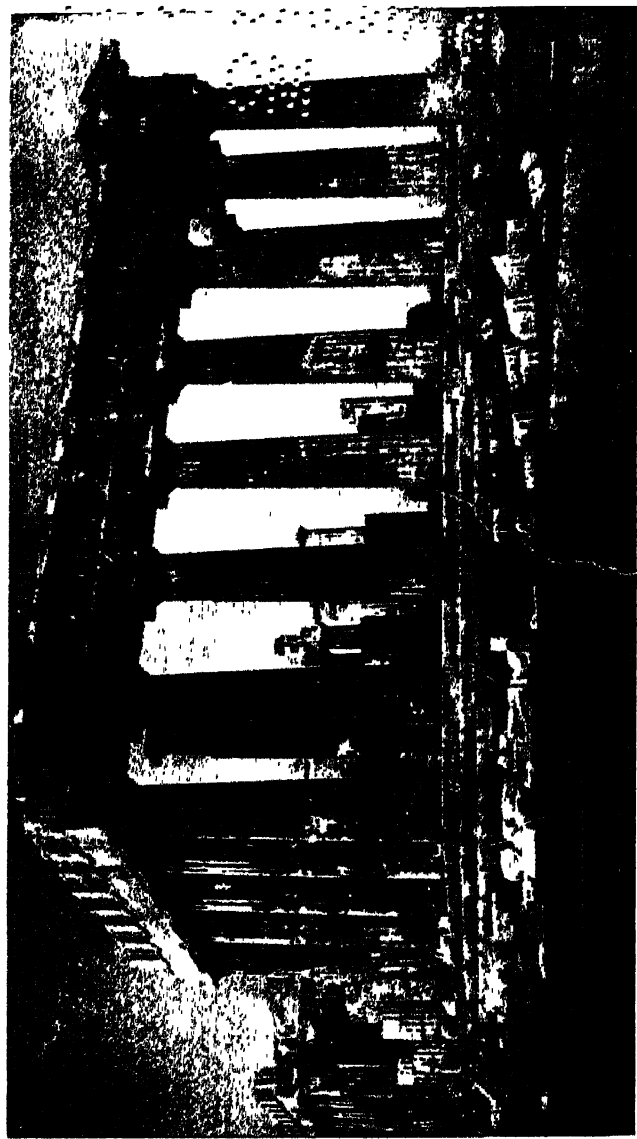
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East Front and South Side of the Parthenon

Photographed at Night

# FAMOUS BUILDINGS

A PRIMER OF ARCHITECTURE

BY

CHARLES L. BARSTOW

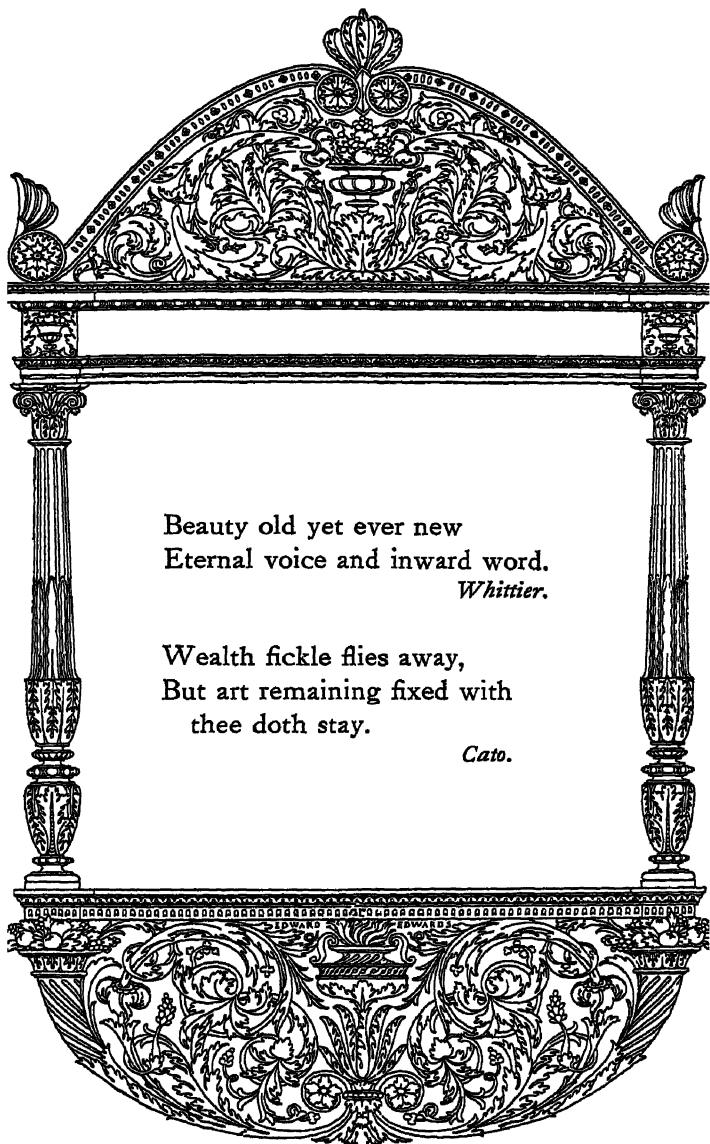
AUTHOR OF "FAMOUS PICTURES," ETC.



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Beauty old yet ever new  
Eternal voice and inward word.  
*Whittier.*

Wealth fickle flies away,  
But art remaining fixed with  
thee doth stay.  
*Cato.*



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## PUBLISHER'S NOTE

The chief object of this little book is to stimulate youthful readers. It is believed that it will help to form correct judgment and taste and that its elementary presentation of the leading styles in Architecture, and their setting in time and place, will be welcomed by many who have hitherto sought in vain for just such information in compact form.

Its brief summaries of principles, periods, and styles; its glossaries of terms and lists of proper names pronounced and explained and its classified lists of buildings in many cities, should make it useful as a reference book for the home and school. It brings together a body of knowledge on an important subject in readable form in a way not attempted before, and is suited to use as a reader, or as a handbook for classes, clubs or reading circles. The occasional intimate biographical matter is intended to interest in the same way as that contained in "Famous Pictures" by the same author, which has proved widely popular.

Competent authorities have read and approved the manuscript.

Architecture can want no commendation, where there are noble men, or noble minds. — *Sir Henry Wotton.*

Architecture is a species of language. It tells us as much of Greece as Homer did, and more of the middle ages than has been expressed in literature. — *Eidlitz.*

Architecture is the printing press of all ages, and gives a history of the state of society in which it was erected. — *Morgan.*

The more you spend on architects, the less you will have to spend on prisons. — *John Burns.*

Every genuine work of art has as much reason for being as the earth and the sun. . . . We cannot look at works of art but they teach us how near man is to creating. Michaelangelo is largely filled with the Creator that made and makes men. . . . Meantime be it remembered, we are artists ourselves, each one, competing with Phidias and Raphael in the production of what is graceful and grand. — *Emerson.*

# FAMOUS BUILDINGS





# FAMOUS BUILDINGS

## INTRODUCTORY

### A WORD ABOUT ARCHITECTURE.

The earliest records we have of man, centuries before the building of the first temples that bordered the Nile, are found in the remains of his ancient dwellings. The building instinct, the desire for a home that would shelter him from the elements and from wild beasts, marked man's development from brute nature. In many places this first home was a cave scooped from the earth in a hillside or was hewn out of the rock, with a boulder serving as a doorway. In others it was woven of reeds or formed from the boughs of trees. Man's dawning intelligence taught him to use the material that could be most easily adapted to the walls of his shelter. Even to-day many races still live as primitively as their forefathers ages ago. You see it in the skin tepee of the Indian, in the ice-built igloo of the Arctic Circle, and in the adobe or mud hut of the torrid regions. But, so long as the houses were built only for protection against heat, cold, and rain, we do not speak of their architecture. It is when they combine a certain grace and beauty with their usefulness that building them becomes an art. Thus architecture came gradually into being, in the growth of the first great nations.

Four thousand years ago, in Greece, it attained the highest point it has reached in what we call proportion and beauty of line; the great buildings of the Roman Empire gave it the majesty and dignity that comes from size and mass; while in the cathedrals of medieval Europe it found a new and more splendid form. To-day America is, above all others, the building nation, and the style of architecture that we are developing will tell to the future the story of the progress of our artistic ideals and our civilization. Just as climate changed the form of primitive dwellings, so it influences the architecture of highly civilized nations. As society grew more complex people gathered together in great cities, religion, wealth, and the ideas of the people began to determine the character of their buildings, as well as the location and the materials of which they were constructed.

Let us see how climate varies the type. If you have lived in the North, you will know why a different kind of building is more appropriate there than in the hot South, where protection from the sun is the chief consideration. In one place we build to keep warm, in the other to keep cool. In the snow lands, there are steep roofs to let the snow slide off so that the roof will not be crushed by so great a weight. In hot countries, the houses are usually built around a court-yard, and have a flat roof on which the people gather in the evening.

What has building material to do with it? That is even plainer. Where clay is abundant we shall find many houses and public buildings of brick. When a country is young and there are forests everywhere, lumber will be plentiful and cheap, and the great majority of the

buildings will be constructed of wood. This applies at the present time to our own country, where, outside of our large cities, wooden structures are almost universal. In Europe, on the other hand, where the forests are few and carefully guarded, stone and concrete take its place.

What has religion to do with building? Religion inspired the Greeks to design their beautiful temples, in order that their place of worship might be worthy of their gods. In the Middle Ages the same spirit of devotion impelled men to spend years of toil erecting the great cathedrals.

And wealth? A prosperous people will have better and more permanent buildings. They will be able to maintain great architects who will give their whole time to designing and building beautifully and suitably for all the practical and artistic needs of life. The treasures of monarchs and princes have produced countless castles and palaces in Europe, while in America, libraries and buildings of charity have been sown broadcast over the land, through the wealth of private individuals.

These are only a few causes that have resulted in the manifold developments in the art of building. It is a process of growth that never really ceases; even the decay and ruin of a civilization does not prevent the spread of its architectural ideals. The creation of the type of edifice that we call the sky-scraper in the United States during the last few years, may be cited as an instance of this growth, although it had for its immediate cause the narrowness of the island on which the city of New York was founded.

As you progress in the study of the types of buildings,

you will see that every building ought to mean something definite, and should have an outward as well as an inward fitness to the purpose for which it is to be used. A church ought to be quite different from a jail, and a department store or a factory should not look like either. The man who builds his dwelling in a village street to-day so that it looks like a medieval castle, or the committee that erects a school that resembles a jail, has made a mistake for which there is no excuse; a mistake which, with the simplest knowledge of the main buildings of the world and their meaning, would have been utterly impossible.

During the development of architecture, in the different countries and through the different ages of the world, certain distinct styles of building have grown into being. There are not very many different styles, because each one was hundreds of years in becoming perfected. At length, one building in particular, or a few buildings, represented the very best in all that long growth.

The purpose of this book is to show the reader the essential features of the most perfect buildings, and to give a slight idea of the life of the time which they represented. If you can once discover the reason why Greek architecture is called the most beautiful in the world, or understand how and why the different styles grew and developed, you will be able to judge the appropriateness or the faults of the buildings that are being erected in your own town or city to-day. With such a knowledge, the old church in your neighborhood, the library, the city hall, or the state house will have a new significance and a deep interest to you. This knowledge is not dif-

ficult to attain, for you need not go deeply into the subject. In the past, and particularly in the Middle Ages, it was an indispensable part of education. Boys and girls were taught to appreciate the art and beauty in the midst of which they lived.

At the present time we are suffering from the neglect of these studies, a neglect that has produced the ugly, misshapen buildings that disfigure the streets of nearly every community in the country. We are beginning to understand that ugly surroundings are responsible for ugly conditions. A new spirit is sweeping over the country, a belief in the value of beauty, whether it is in the home or in a public building. You cannot begin too early to understand its meaning.

#### THE PRINCIPLES OF ARCHITECTURE.

Nearly every boy, who knows anything about the woods, or who lives near a stream, has built, or has tried to build, a house for himself.

Perhaps it was only a cabin of logs and brush, or if he could get the material, a frame shack big enough to hold a table, a stove, a bunk or two, and his canoe. Even in constructing such a simple and elementary affair, the young builder had to consider two things. His cabin must be the right size for his purpose and for the place where it was to be located. It must be strong and well built to endure the winter winds and resist the rain and snow.

Fitness and strength are thus the two primary necessities for any building, from a boy's shack to a great temple. Now there are three principles on which the art

of architecture is founded. Strength, and fitness, and a third, beauty.

Without fitness a building is useless, and is consequently soon destroyed or made over; without strength it falls to the ground; but if it has no beauty it is a mere collection of brick and stones and lumber, that does not deserve to be called architecture, though it may last for years, as a continual reminder of the bad taste of the builder and of the people who endured it.

When we say that architecture demands these three principles, we must understand what is included in each in order to be able to appreciate and judge the buildings we are about to examine.

A principle is simply another word for a general and universal truth, like the principle in mathematics, that the whole is equal to the sum of all its parts. It is a cause that governs facts; an original law, in obedience to which facts exist. A fact may be true to-day and false to-morrow. It may be true to-day that the Woolworth Building is the tallest in the world. To-morrow it might be false. But a principle is a general truth from which others are derived, and upon which many facts may depend, and it is true always. If we state our principles correctly, all facts will conform to them, and if any one tells us anything, which does not agree with a principle, we may know at once that he is mistaken. Principles are much more useful than facts and, if we are sure of a few principles, we can afford to forget many facts.

Take the first principle of architecture that we mentioned, fitness. It has to do with the practical uses of

buildings, their convenience and arrangement. "A city hall, for instance, should be large enough properly to represent the community, and it should be dignified, because it is a visible symbol of law and order. In this sense the fitness of all of the great buildings of history, even of ancient times, is most apparent. Perfection in this detail means that the building fits into its surroundings as if Nature herself had been the architect. The Romans went much further than the Egyptians and Greeks, and *consciously* planned their buildings with skill and science. To-day it is almost the chief requirement of a building, for under it come the many modern necessities of heating, lighting, ventilation, elevators, and drainage, as well as its adaptation to the special purposes of the building; that is, to the purpose for which it has been created.

In addition, fitness is concerned with location and climate. As we have seen, in a country where there is much snow we have a steep roof, while in the hot regions the flat roof serves as an additional floor after sundown. Fitness may have an even deeper and greater meaning when the architect attempts to express in his design, his ideals, or his religion.

Under the second great principle of architecture, strength, come practical problems of making a building secure and durable. We shall see how the forms of buildings often grew out of the necessity of making them strong. The Greeks used the perpendicular and right-angled construction, derived from the lintel and post of their earliest dwellings. This fixed the type of their buildings. The Romans used the round arch as the basis



of their immense development of the art under the Empire, and as a result their buildings look very different.

The third general principle in architecture is beauty, and this is quite as essential as the others. The causes for the beauty of a building lie partly in the material, its color or its texture, or in the form of the building (which is so important that we shall have to study it in some detail), or in the expression of the building as produced by its character, association, novelty, or structure. It may be a combination of some, or all of these things, or some other thing altogether.

The table on the following page, as given by Mr. Sidney Fiske Kimball, will help us to remember the above classification; and later on some of the words will be more fully examined.

The three great divisions of a building are the walls, the roof, and the windows or openings. Another division might be made into six parts: first, the floor or plan; second, the walls; third, the roof; fourth, the openings, doors, windows, etc.; fifth, the columns and supports; and sixth, the ornaments and decorations. It is the style, shape, and dimensions of these different parts that determine to which of the few great styles of architecture any building belongs.

Most obvious to the average person are the general shape of the mass of the building, determined by the roof and walls; the effect produced by the openings being pointed, rounded, or horizontal; and the presence or absence of columns; but ornament and decoration are also very important and essential things.

In a book like this we can say very little about orna-

ment, although it is so great and essential a part of a building. Absence of moldings alone would change the entire appearance of any great building.

## TABLE OF ESSENTIALS.

FITNESS	{	Convenience for practical uses.
		Separation of public and private portions.
		Access to all parts.
		Good lighting, ventilation, drainage, etc.
		Suitability of character.
		Fitness to surroundings.
STRENGTH	{	Materials.
		Structure: Walls, beams, arches, vaulting, roofs.
BEAUTY	{	In materials — color, texture.
		In form, mass, proportion, ornament, repetition, sequence, balance symmetry.
		In expression of:
		Materials and structure.
		Purpose, character.
		Arrangement of parts.
		Environment, national and racial culture.
		Personality of the artist.
		Historic associations, etc.

As we examine the pictures and study the buildings in this book let us think of them with reference to the "Table of Essentials." If a building in the book or one that we see in our travels pleases and satisfies us, let us apply the principles in trying to discover what is the cause that produces the pleasure and satisfaction. Or

if one displeases us, let us try to discover what is wrong about it, what there is that does not conform to the true principles of building.

#### THE TERMS USED IN ARCHITECTURE.

It is very important to know the meanings of terms used in architecture.

We all know the meaning of floor, wall, roof, door, and window. We could not describe a house without them. If we did describe a house in these words and our reader did not know their meanings, he would have no idea what we were talking about. Yet people constantly read works and guide-books, who do not know the precise meaning of such common and necessary terms as capital, clerestory, crypt, order, nave, pediment, spandrel, transept, tympanum, and so forth. These and several more must be understood. It is not enough to look them up that you may understand some given description, they should be *learned by heart*. It is a thousand times worth while to do so. They are the keys that unlock many doors.

(An alphabetically arranged glossary of architectural terms, and also of the Proper Names mentioned, will be found at the end of the volume.)

#### THE STORY OF ARCHITECTURE.

The history of architecture tells the story of the development of the art of building. Nations have risen from the darkness of the past, and have attained great power and culture, only to sink into obscurity again,

leaving, as the only evidence of their greatness, the ruins of forgotten temples and of cities that once swarmed with life. So the study of buildings is, in its broadest sense, a preparation for the study of history and of civilization itself.

Before beginning to examine the "type buildings" that we have selected for special study, let us take a bird's-eye view of the whole field, remembering that the styles of architecture form a continuous development from first to last. The spirit of each age of the world has determined the changes made from the style of the preceding age, and a knowledge of the buildings that represent the main types will be of everyday service to any one who reads books and newspapers and talks with intelligent people.

Those ancient peoples, the Assyrians, the Chinese, the Japanese, and the inhabitants of India, represent the earliest of architectures, but they had little influence upon the great historical buildings we are to study, and we may regard them more as curiosities than as objects of study.

Following these nations came the Egyptians, the Greeks, and the Romans, in the order named. The architectures of these peoples we still imitate to-day and we need to know as much as possible about the buildings they erected.

The Byzantine, Romanesque, and Saracenic architectures next came into being and were developed, while, from the thirteenth to the fifteenth centuries, the Gothic style led, developing widely and in slightly different ways in all the leading countries of Europe.

Then came the great intellectual awakening of the fifteenth century called the Renaissance, which produced the great painters, the great sculptors, and the great builders of the next three hundred years. From that day to this there has been little new, but revivals and combinations of old styles have ruled the building of the times.

The different styles are most easily fixed in the mind by means of pictures of the best buildings of these types. It will give a foretaste of what these succeeding styles are like if we think of the subject under the following elementary classification.

*Architecture of the Beam or Lintel.* In this type all windows or openings are spanned by a straight beam. Such was the work of the Egyptians, the Persians, and the Greeks. An example of lintel construction is given in Figure 8

## II

*Architecture of the Round Arch.* This class includes all buildings in which such openings are spanned by a semicircular arch. The Assyrians and the Etruscans employed it. The Romans employed it later, and used it *with* the beam. The styles using this structure are the Romanesque, the Norman, and the Byzantine. A simple example of arch construction is the illustration on page 52.

## III

*Architecture of the Pointed Arch.* Buildings in which the pointed arch is used include the Mohammedan in the East and the Gothic in the West. Simple examples of pointed arches will be found on pages 133 and 141.

## IV

*Renaissance.* The combination of lintel construction with Greco-Roman ornamentation. This style began with the fifteenth century and spread rapidly. Michaelangelo was one of its greatest exponents. Look at the pictures on pages 163 and 176 for details of this combination style.

## CHRONOLOGICAL TABLE.

The following table will be helpful for easy reference, as well as for preliminary study, and will enable us to see the relation of any style of building to other buildings in time and place.

## Famous Buildings

## CHRONOLOGICAL TABLE

KIND AND PLACE	TYPE BUILDINGS	MEN OF PROMINENCE	CHARACTERISTIC FEATURES
Egyptian	Pyramids Temple Edfou (late) Luxor, Karnac	Rulers and architects	Solidity, slanting lines, columns.
Greek	Parthenon Erechtheum	Phidias Pericles	Three orders of columns, sculptural decoration, simplicity and perfect proportions.
Roman	Colosseum Pantheon Arches Palaces Temples	Iktinus (Architect of the Parthenon) Emperors Nero Flavius Hadrian Vespasian Diocletian	Rounded arch; vaulting, dome Practical usefulness. Engineering works; theaters, etc. Paneling and decoration.
Early Christian	S. Apollinare, Ravenna St. Paul's without the walls, Rome (rebuilt 1821) <i>Basilicas</i>	Constantine	Broad nave, rows of columns and side-aisles and clerestory; wood roof, atrium in front, plain exterior, rich interior
Mohammedan Saracenic Sassanian Arabic Moresque, etc.	Mosque of Cordova Alcazar Alhambra Taj Mahal Agra	Mohammed	Beautiful domes, colored tiles and decoration, arabesques; geometrical, slender interlaced pattern, minarets, horse shoe arch.
Romanesque Eleventh and twelfth centuries	Pisa San Miniato, Florence Durham, England	Monks and rulers	Chiefly church architecture, rounded arch, vaulted stone ceiling.

CHRONOLOGICAL TABLE—*Continued*

KIND AND PLACE	TYPE BUILDINGS	MEN OF PROMINENCE	CHARACTERISTIC FEATURES
Gothic, France	Sainte Chappelle, Paris, 1242 Notre Dame, Paris, 1163 Cathedrals— Rouen Reims Chartre Palais de Justice Rouen) (late) Hôtel de Cluny (late)	Maurice de Sully De Lusarches (Amiens) De Corby	Flying buttress, pointed arch, ribbed vaulting, tracery and glass.
Gothic Great Britain	Lincoln, 1185 Westminster Abbey, 1245	Wm. of Sens Wm. of Wykeham	Early 1180-1280 Simplicity and purity. Decorated 1280-1380 Rich decoration, lightness of construction. Perpendicular, fan vaulting, vertical tracery.
Gothic Germany and Belgium and Spain.	Cologne Cathedral, 1243 Strasburg, 1240 Antwerp, 1352 Town Halls (Brussels, Bruges) and guilds (Louvain) Seville in Spain		Variations, circular churches, use of brick.



CHRONOLOGICAL TABLE—*Continued*

KIND AND PLACE	TYPE BUILDINGS	MEN OF PROMINENCE	CHARACTERISTIC FEATURES
Gothic Italy	Siena Orvieto Cathedral Florence Loggia di Lanzi, Florence Doges' Palace, Venice Certosa of Pavia Milan Cathedral	Pisano	Less real Gothic structure than in other countries;
Renaissance Italy Early 1420-1480	Dome of Florence Cathedral Riccardi Palace, Florence Pitti Palace	Brunnelleschi, 1377-1446 Michelozzo for Cosimo di Medici	More form than construction; chiefly of palaces; modified Roman columns; revival of classic forms originally and freely applied.
High 1490-1550	Vatican St. Peter's Farnese Palace, Rome Villa Medici	Bramante Michaelangelo Sansovino (Venice) San Gallo Raphael	Formal classic refinement and dignity; domes.
Decline Baroque 1550-1600	Santa Maria della Salute, Venice Library,	Bernini	Engaged columns. Colossal orders. Poverty of invention, sham decoration, huge scrolls, florid stucco, and lack of propriety.
Rococo 1600-1700	Fountain of Trevi, Rome	Maderna	

CHRONOLOGICAL TABLE—*Continued*

KIND AND PLACE	TYPE BUILDINGS	MEN OF PROMINENCE	CHARACTERISTIC FEATURES
Renaissance France Early Advanced Louis XIV or Classic Period, 1645-1715	Fontainebleau Château de Blois Luxemburg Louvre Versailles Invalides	Francis I 1520-1547  Pierre Lescot De Lorme	Gradual introduction of classic.   Louis XIV. The great period.
Decline or Rococo (Louis XV) 1715-74	St. Sulpice Palaces	Louis XV	Uninteresting exteriors. Extravagantly decorated interiors.
Renaissance Gt. Britain	Whitehall St. Paul's, London	Inigo Jones, 1572-1652 Sir Christopher Wren, 1632-1723	Slow release from Gothic; a picturesque mixture of Gothic and Renaissance.
Renaissance Germany	Town Halls Zwinger Palace, Dresden Heidelberg Castle	K. Vischer	An early, late, and a declining period, as in France.
Renaissance Spain Early 1500- 1556 Classic, to 1650	Cathedral, Granada University, Salamanca Escorial Monastery	Juan Battista	An early and classic, followed by an extravagant decline.
Decline	Palace Charles V, Granada		

## EGYPTIAN ARCHITECTURE

When we remember that all the time, since the beginning of the Christian Era, is not far from half as long as the period from the time of the Pyramids to the birth of Christ, we get some feeling of the long ages through which the Egyptians lived. Millions of them were slaves, working, not through love, but by force; building their tremendous monuments.

The Egyptians had knowledge of science and could do things which to-day we do not know how to imitate. Some of their arts are lost to us, such as how to preserve the bodies of the dead, nor can we make colors that will remain unfaded for thousands of years as theirs have done. They also understood geometry, chemistry, medicine, anatomy, and music. That they practised many of the principles of mechanics is shown by their ability to move the great stones of their Pyramids, and their monuments, and temples. They also manufactured glass, some of it of a kind that we cannot now produce.

The architecture of Egypt has been divided into three great periods: First comes the Ancient Empire, from about 5000 B.C. to about 3000 B.C. This was the period of the Pyramids. The next period is called the Middle Empire, and extends from about 3000 B.C. to about 1700 B.C. This is the period of the rock-cut tombs. The third, and last, of the great periods is the one called the

New Empire, which extends from about 1700 B.C. to about 350 B.C., and this is the period during which the great temples were built, such as Karnak, Luxor, and Edfou. Although we have selected the Pyramids for our illustration, we ought to remember that the period of the temples was the greatest, and produced lasting monuments of the greatest beauty.

## CHIEF CHARACTERISTICS.

Let us note, in particular, five things about the monuments of Egypt:

First, their great mass and size. A single stone was sometimes over twenty-five feet long, and it had to be brought miles from the quarry.

Second, note and remember their peculiar style of column, a picture of which is given on page 27, Fig. 3.

Third, imagine all of their works to be covered with the greatest profusion of color. They had their own ideas about decoration, and often covered every inch of a building with pictures, symbols, and designs. Many were carved, some only painted, and all of them had some meaning connected either with religion or with the rulers. The rawness of the colors, most of them the crude primary colors, is also characteristic of the Egyptian style.

Fourth, note the fact that the structure of their buildings was almost always that which we have described as the architecture of the beam or lintel. We define a lintel as a beam of wood, or iron, or stone, or some other substance, over the top of a door, or window, or any other opening, to carry the weight of the wall above.

We have just used the word "structure." Let us stop for a moment at this word, for structure and structural are words that we often meet with in books on architecture. The structure of a building is the most important thing about it, for everything else depends upon it. Everything rests upon the structure, and the minor parts, if they are honest, will follow the main lines of the structure. Good lines in the decoration of a building should follow the basic structure, and to say that a decoration or ornament is "not structural" is to condemn it. Let us be sure that we know what this means. For instance, if the structure of a building was of the lintel type, and we concealed this by covering it up with material so as to make it appear like an arch, we should be neither honest nor structural.

If a column is so placed that it does not support anything, it becomes merely an ornament. Such a column has not the dignity of one that is doing real work. In general, that which is honest in architecture, as in life, is good; while anything that is make-believe, and pretends to be something that it is not, is poor, and does not command our admiration. It is a law in architecture, that beauty comes first from utility, and that nothing must ever be done to deceive. If you bear this in mind, you will rightly feel ashamed of some of the buildings which you may see in most modern towns.

Fifth, note another peculiarity of Egyptian architecture in the slope or slant so often given to the walls, where ours would be exactly upright or vertical. If the Egyptian idea of greatest strength was a sloping wall, do you

suppose they would have spoken of an honest man as a sloping man?

#### THE GREAT PYRAMIDS.

The most ancient monuments of the world, the Pyramids, were built as burial places for the kings. They consist of masses of stone and brick raised up around the chamber where the body of the king was to lie. The tomb was made so that the place where the body lay would be secret, and secure from thieves. Yet, to-day, there is not a tomb that has not been explored and rifled. The material used was limestone cased over with granite, and the passages were lined with granite. The outside was cased with polished stone, perhaps of many different colors. The largest of the Pyramids was the tomb of King Cheops. It was 760 feet at the base, 484 feet high, and had an area of 577,000 square feet. The angle of the slope was about 50 degrees, but the angle of slope of the different Pyramids is never alike. The jointing of the stones was done with the greatest nicety, and the construction throughout shows wonderful scientific skill.

George Ebers writes, in his description of one of the Pyramids: "For a moment the enveloping cloud lifts from the horizon and we see the prodigious Pyramids standing before us with their sharp triangles, and then the mystic curtain falls. To the right and left, we sometimes see buffaloes grazing; sometimes flocks of silver herons; sometimes a solitary pelican within gun-shot of the carriage; then half-naked peasants at their daily labor; and pleasing villages some distance from the road."

As we stand before the largest of these works of man, which, as we know, the ancients glorified as "wonders of the world," it is only by a comparison with other structures, present in our memory, that we can get any idea of their immensity. If the tomb of Cheops were hollow, St. Peter's at Rome could be placed within it like a clock under a glass cage. If the tomb of Cheops were razed, a wall could be built of its stones all around the frontiers of France. "Time mocks all things, but the Pyramids mock Time," says the Arabian proverb.

Let us think for a moment, of the Pyramids in rela-

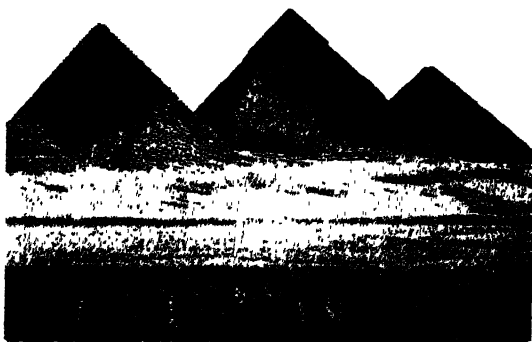


Fig. 1. The Pyramids.

tion to the principles given in the table, especially as to the principle of fitness. Do you not feel the fitness of these big masses of stone to their surroundings in the sandy desert, and to their use as the tomb of kings? The Egyptians looked upon their houses as temporary abodes, but upon their tombs as permanent dwellings. This fitness of things is essential to the beauty of

any object, be it building, painting, or anything under the sun.

There is a solemnity about Egyptian architecture, and great strength, but, of the many elements in the table, few could be applied to the Pyramids. Repetition, variety, and ornament, for instance, are not among their qualities. However, I think we can select two elements of beauty that are always in the Pyramids; namely, symmetry and simplicity. The Pyramids present an almost perfect symmetry, and yet perfect symmetry in buildings, as in pictures, may make them seem monotonous, but if there is not perfect symmetry, there must be at least a feeling of balance.

One way to look at a building is to regard it somewhat as a picture, for buildings and pictures have much in common. To be sure, they also have many points of difference, for painting is an imitative art, while architecture is not so. But, in judging the effect of a building upon our sense of the beautiful and upon our emotions, we find that many of the principles and laws are just the same as in painting. The fine arts are all modes of the expression of people, or nations, or ideas, and their production is governed by laws. We compose a picture, we compose a piece of music, and, no less we compose a building; and the laws of composition must be followed in the one as in the others. Ruskin, who wrote much about art and architecture, gives us some laws of composition in architecture, one of which is the "law of principality." This applies to all of the fine arts. "First determine what is the principal thing," he said; "you may have one large mass and several smaller ones, but there must be one



prominent above the rest." Proportion is another important matter in architecture. Symmetry, which is as necessary in architecture as in painting, can be had where all the parts are of equal size, for symmetry is mere regularity of structure; that is, having one side exactly balance the other; but proportion must be of three unequal things at least. Proportion, principality, symmetry, are things you will often hear mentioned in regard to buildings, and you will feel their meaning more and more as great buildings become familiar to you. In a building, too, as in a picture, there are masses of light and shade. Some one has said that the deep shadows cast on the faces of buildings are to remind us of all the troubles, labors, and disappointments that are met in erecting a building, and those who must occupy it, be it prison or workshop, and of all the troubles in life itself. If we refer to the table on page 11, we shall see that the above points about buildings and pictures are matters that pertain to the principle of beauty in architecture.

The most important thing that the Egyptians sought for in their works was duration; and so dry is the climate that not only the monuments of stone, but many of the most fragile cloths and woods, have withstood destruction to this day.

In the Pyramids, extreme simplicity is combined with symmetry. Do you not sometimes look at a wooden house, covered with ginger-bread ornamentation, and wish that you could tear it off? If so, you feel that it is not simple enough, and that the house would look better without that filigree work. Think of the simple dignified Pyramids. Are they not good to look at?

## EGYPTIAN TEMPLES.

We spoke of the temples as the greatest work of the Egyptians, but we shall only be able to look at them briefly. The Egyptian temple was surrounded by a plain wall. Leading from the wall-opening to the temple is usually placed a row of sphinxes, and then comes the fore-court enclosed by rows of columns; then a dark columned hall; and, furthest of all, an inner sanctuary. The columns were of great size, colored in brilliant hues, some of which remain brilliant to this day. The inscriptions are all in hieroglyphics, or picture writing, and were very hard to read, until the discovery of the rosetta stone. This contains an inscription in hieroglyphics and its translation in Greek. By comparison, the meaning of the hieroglyphics became known.

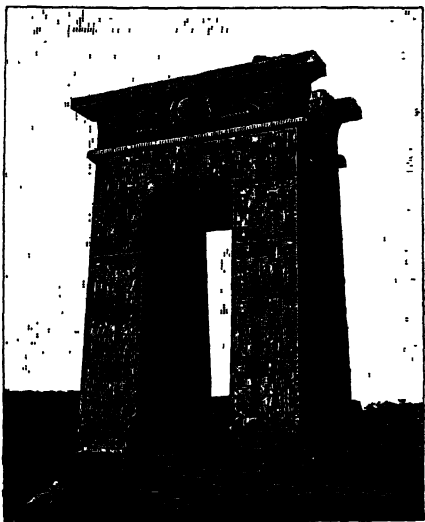


Fig. 2. Propylon or Gateway at Karnak, Egypt.

Figure 2, the illustration on this page, shows the great Propylon of the Temple of Karnak. Such a monumental gateway usually stood before the entrance to a temple. Notice the carving, the inward leaning of the

walls, and the design at the top, which was the Egyptian symbol of divinity. Figure 3 shows the portico of the temple at Edfou. Notice again, the inward slope of the sides, also the flat roof, the shape of the capitals, and columns, and the profuse carving of the walls.



Figure 4 shows the hypostyle Hall of Karnak. Any structure, with or without walls, the ceiling of which is supported by columns, is called a hypostyle. The Hall of Karnak is one of the greatest temple interiors in Egypt.

Fig. 3. Portico of the Temple of Edfou. Figure 5 was the obelisk, another monument common in Egypt, which was supposed, by its shape, to symbolize the rays of the sun. These tapering shafts were of a single piece, the top or apex usually sheathed in a bronze top. They were probably set up in honor of the kings. Figure 6, the tomb at Beni-Hassan on the western side of the Nile, is often cited to show that the Greeks copied their Doric column from the old Egyptians. Compare the columns in the illustration of this tomb with the Greek Doric column on page 36, and see if you do not think they are similar. The truth is, that although the Greeks did borrow, they altered and improved whatever they took, until it was almost a new creation. Shakespeare borrowed the plots of some of his plays, and it seems that the mind

of genius loves to seize upon something old, and give it greater life. The great architects of to-day, instead of inventing new orders and styles, recombine and apply the old ones.

## STORY AND ANECDOTE.

It is said that, in building the pyramid of Cheops, King Khufu employed seven million men in forced labor for thirty years.

In the Boulak museum at Cairo, many of the instruments used by the early Egyptians are preserved. There are set-squares, rulers, palettes, paint boxes, and models of pylons, and, among other things, plans drawn on stone and



Fig. 4. Hypostyle Hall of Karnak, Egypt.

colored, to show different materials. Many architects' names have been preserved upon tombs. At Munich there is a statue of the principal architect of Thebes, Bakenhonson. Perrot says that architects were sometimes recruited from among the princes of the royal blood. There is one genealogical table in which the profession is shown to have descended from father to son for twenty-two generations.

The great aim in building the pyramids was to make them last so that they might defy earthquake and other enemies, including time itself. If the stones and masses had been smaller, all might have vanished before now.

All writers do not believe that the workmen upon the pyramids were really oppressed.

One writer suggests that the building work was probably

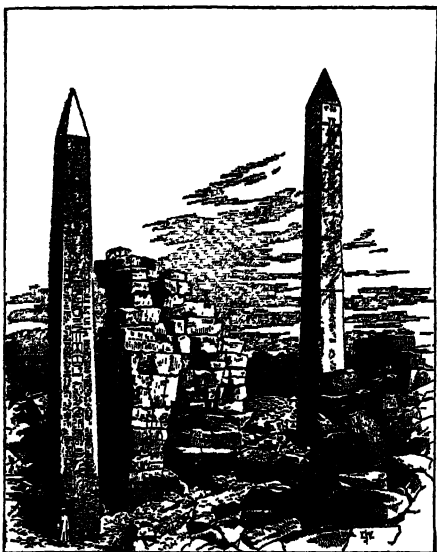


Fig. 5. Obelisks at Karnak (Thebes) Egypt.

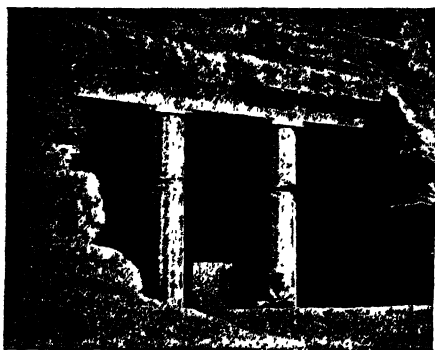


Fig. 6. Tomb at Beni-Hassan, Egypt, showing so-called proto-Doric columns.

done during the annual inundation of the Nile, when the king fed and clothed the poorer classes, who might not otherwise have been able to live.

The Egyptian king was looked upon as the representative of the gods.

## GREEK ARCHITECTURE

We have spoken of how the Egyptians worked as slaves. The Greeks, on the contrary, were free people and they had gained their freedom by working and fighting for it. From such people we should expect a different style of building than that of the Egyptians. The Greeks loved both freedom and beauty, and their temples were true and noble expressions of themselves and their aspirations. Their religion, though different from the religions of to-day, was a pure and lofty one, and entered largely into their architecture. Their temples were built to do honor to their gods, and were set upon their beautiful hills.

They lived near the sea, and so became sailors and traders in the distant countries. Through their travels in other lands, they received, and then changed to suit their own ways of thought and of expression, the ideas they got from others. And whatever the Greeks adopted from others they were likely to improve.

The architecture that we know as Greek is the most perfect of all architecture, and the Parthenon, a temple at Athens, is its best example.

There is a very early period of Greek architecture, from say 1500 B.C. to 1100 B.C., the remains of which are chiefly tombs and gateways. These remains are not numerous. The Lion Gate-Way of Mycenæ is the most

often cited. Several centuries intervened between the period of these remains and the great period called the Hellenic. The ending of the war between the Greeks and the Persians delivered the country from the fear of invasion, and left it free to exercise the arts of peace. Under Pericles, from 460 B.C. to 429 B.C., the old temples were rebuilt with greater splendor.

This was the Golden Age of Greek Art, both in architecture and in the sister art of sculpture. Pericles was the great figure in Athenian public affairs for forty years; the "one man power" of his time. His fleets overcame the neighboring countries, and the wealth and prosperity of Greece was the greatest in the world. He was a believer in art, and under him flourished the great sculptor Phidias, who superintended the construction of Pericles' buildings.

If you had walked about the streets of Athens in those days, you would have seen many walls going up; temples and other buildings being erected; and great loads of stone, cypress-wood, brass, and even ivory and gold being put into them. Carpenters, masons, goldsmiths, and workmen of all kinds were as busy as could be. Sculptures made by Phidias, or under him, with which to adorn the temples, were the best the world has seen to this day. Sculpture was then as much a part of a fine building as the stone itself, and Pericles had such an idea of the importance and value of beautiful things, that he kept the best artists busily at work. He thought so highly of them as men, that he was much in their company and lived with them on terms of equality. The result was that he made Athens the most beautiful city in the world.

We have many things in our cities now of which the Greeks could never have dreamed; printing, the telegraph, the telephone, steamships, railroads, and a thousand other modern wonders. Yet the Greeks were able to build in beauty what we are glad to imitate. Perhaps it was because their lives were more calm and more heroic. They preferred to do, or to make, or to think, a beautiful thing, than to outdo their neighbors in getting rich.

#### CHIEF FEATURES OF GREEK ARCHITECTURE.

One of the chief features of Greek architecture, as of Egyptian, is the column and lintel construction, but the Greek style is worked out so differently that we forget the source. The best Greek buildings were the temples, as was the case with the Egyptian, but the columns of the Egyptian temples were on the inside of the building while the columns of the Greek temples were on the outside. While the Egyptians went into their temples, the Greeks placed theirs upon the hills and worshiped from the outside, even from as far as they could see them. The object of the Greek temple was to provide a shrine for the image of the god or goddess to whom it was dedicated.

The Greek temple has been briefly described as a rectangu-

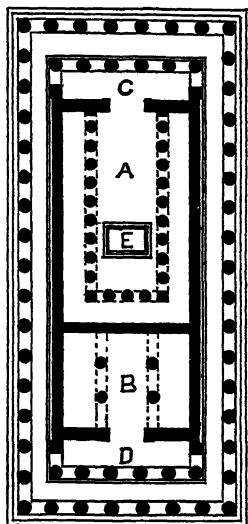


Fig. 7. Plan of the Parthenon.

A, cella; B, Parthenon; E, site of the statue of Athena.



lar building with doors, but without windows, surrounded on all sides by a single or double row of columns. Figure 7 is a ground plan of the Parthenon. The part marked A was the cella, or inner enclosed por-

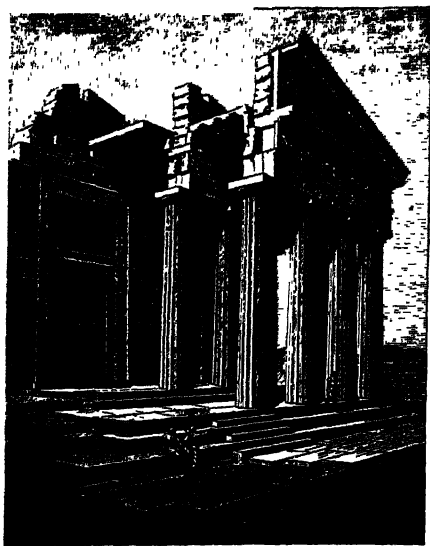


Fig. 8. Doric Architecture.

Diagram of the northeast angle of the Parthenon, illustrating method of construction.

tion. E marks the place where stood the famous statue of Athena. Figure 8 is also a very useful illustration, showing the construction of all the parts of the building.

All Greek temples resemble each other in so many respects that, having seen one, we should never be at a loss to recognize another. There were three different

orders, named Doric, Ionic, and Corinthian. These will be fully described later on, but let us begin by learning that the Doric, named by the shortest word of the fewest syllables, was the earliest and most simple, while the Corinthian, named by the longest word with the greatest number of syllables, was the latest and most complex. If we learn to know the Doric order (see Figure 9),

and the names of its parts, we shall be able to understand a description of the Parthenon or any Doric building.

#### THE ORDERS.

An order, in classical architecture, consists of a column entire, including base, shaft, and capital, together with the superincumbent entablature, these forming an architectural whole, and the characteristic elements of a style. Every order consists of two essential parts, a column and its entablature. The column is divided into three parts; base, shaft, and capital. The entablature or upper part of the building, which is supported by the column, consists of architrave, frieze, and cornice. These are well shown in the illustration, and are better understood by referring to it. A description in words will help to fix it in our minds, besides teaching us how to describe it to others. The architrave is the horizontal beam resting immediately upon the columns; it was left plain. Above it runs the frieze, divided into square panels called metopes. The metopes were filled with sculptured reliefs, and were separated from each other by projecting blocks called triglyphs. The upper part above the frieze is called the cornice. It seems quite unnecessary at first to tax the mind with these little details, but we find these words coming again and again before us, and it is surprising, after all, how few of them are required to know what we need to know of the subject, or to understand nearly all that is written about it.

The character of an order is displayed not only in its

column, but in its ornaments, its general style, and its detail.

### THE GREEK DORIC ORDER.

The column of the Doric order has no base, that is,

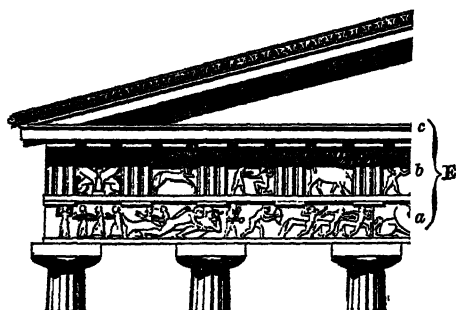


Fig. 9. Doric Entablature.

E, entablature; a, architrave; b, frieze; c, cornice.

it rests directly on the stone platform, and is thicker at the bottom than at the top, swelling outward in a subtle curve called entasis, which we shall describe later. The Doric column was fluted, that is,

channels or grooves ran up and down its whole length, sometimes sixteen, sometimes twenty in number, with a sharp edge between them. The fluted part is called the shaft and the top of the column is the capital. The capital

of the Doric column is very plain.

Fig. 9 shows a Doric entablature, and, in the illustration, the three parts are indicated by lettering.

The abacus, shown plainly in Figure 10, is the slab or plinth which forms the upper member of the capital of a column or pillar. In Figure 10, A

is the abacus of a column of the Parthenon. Notice its plainness and simplicity.



Fig. 10. Doric Order. Capital of the Parthenon. A, abacus.

The Doric order is the oldest and strongest as well as the most simple of the three Greek orders, combining with solidity and force, the most subtle and delicate refinement of outline.

#### THE GREEK IONIC ORDER.

The Ionic order is named from the Ionic race, by whom it is supposed to have been developed and perfected. The distinguishing characteristic of the column of this order is the volute, or spiral ornament of its capital. In the true Ionic, the volutes have the same form on the front and rear of the column, and are connected on the flanks by an ornamented roll or scroll,

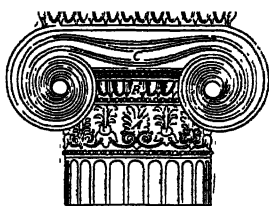


Fig. 11. Capital of the Ionic style.

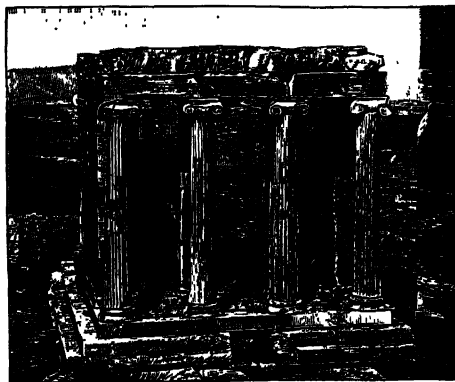


Fig. 12. Ionic Architecture.  
Temple of Wingless Victory, on the  
Acropolis of Athens.

except in the case of corner capitals, which have three volutes on the two outer faces. The best examples of Ionic are the Erechtheum, illustrated by Figure 16, on page 47, and the Temple of the Wingless Victory, given on this page. Both

of these temples stand upon the Acropolis or rocky hill overlooking the city of Athens.

## THE GREEK CORINTHIAN ORDER.

This is the most ornate of the classical orders, and the most slender in its proportions. The capital is shaped somewhat like a bell inverted, and is adorned with rows of acanthus leaves. See the illustrations on pages 56 and 57 and note the characteristics of the capitals. It is important to be able to recognize the capitals of these orders and to name them.

## ENTASIS.

The columns of the Parthenon, in fact the whole building, afford an example of entasis or subtle curving.

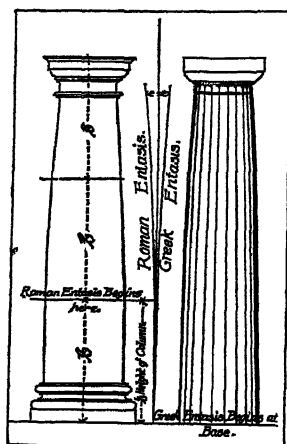


Fig. 13. Entasis.  
(The proportions much exaggerated.)

Careful measurements show that many of the lines of Greek buildings, which appear straight, are really slightly curved. The columns themselves are made to lean inward a little because it was found that, if they were perfectly upright, they would seem to lean outward. The columns at the corner lean inward a little more than the others. The front base of the Parthenon is one hundred and three feet three and one-half inches long, and is made to swell outwards a lit-

tle more than two inches, being higher in the center than at the two ends. The effect of this upward swelling is to

make the line appear less rigid. If perfectly level it would have seemed rigid, or perhaps to sag. It was all a matter of appearance, but it was figured out with the greatest nicety. In the case of a column the variation was less than an inch in thirty feet of height. This curve was called entasis. Figure 13 shows entasis as exhibited in a column, but the proportions are exaggerated. It all reminds us of the saying that beauty loves a curve.

Straight is the line of duty,  
Curved is the line of beauty;  
Follow the one and it shall be  
The other shall always follow thee.

For such reasons, Greek architecture was called intellectual.

#### ORNAMENT.

One of the chief differences between an ordinary country hay-barn and a Greek temple is that the barn has no ornament. Its structure is not dissimilar; the sill, the post, the plates, the roof, the lintels, and the gables, all being put together much like the temple. One was of stone and the other is of wood, so, while proportion may be the chief beauty of Greek architecture, we see that it would look somewhat bare without ornamentation.

Molding is one of the principal elements of ornamentation. It may be defined as a means of modeling the surface of stone, or other materials, in curves or sinkings of the surface; all worked in a parallel direction so as to produce, to the eye, lines of shadow, light, and

half-light. To architects, these are the most important details of a building, or even a style. Moldings are the most fundamental ornaments. Some one has said that they are the architects' way of drawing lines. These lines emphasize the lines of structure in a building, and should be suited to its structural character. Thus the Greek moldings are simple, while the moldings and ornaments of a Gothic cathedral are far richer. This is ap-



Fig. 14. Egg-and-dart Molding.

propriate, for the structure of the Gothic is far more complex. Figure 14 gives one of the best known classic moldings called the egg-and-dart molding. The sample given in the picture is from the Erechtheum at Athens.

The crowning ornament of Greek buildings was the sculpture with which they were adorned. We cannot, in this place, describe the sculptures as they are reserved for a separate book, but, if we could do so, it would help us to understand, and properly to admire architecture. In those days, and for many centuries afterwards, every architect was capable of carving a statue, and the two arts walked hand in hand. They are many ways to admire buildings: the great mass of a cathedral or temple, its dim interior, or its mere size and showiness will impress some beholders; others, perhaps, will be most impressed by the fineness and perfection of the workmanship; but the truest pleasure comes from an understanding of the meanings of the sculptures, the paintings, the decoration, and of the structure itself. In other

words, the more we know about the subject the better we will enjoy it, and the higher and truer will be the admiration we are able to feel for it.

#### OTHER CHARACTERISTICS.

Instead of covering nearly every bit of space with ornament, as the Egyptians did, the Greeks selected only the best places for it, and thus gave it its proper effect. The decorations, especially the sculptures, were one of the chief features of a Greek temple. The works by Phidias, which adorned the Parthenon, were the most beautiful the world has seen. Their remains are now in the British Museum.

Besides their temples the Greeks built many theaters which may be studied from their ruins, but of their dwelling-houses almost nothing remains to us. It is probable that they did not spend much time, or labor either, in building or beautifying them. They were an out-door people.

The Greek style is noted for the repose, harmony, and proportion of its effect. These are terms we might use in speaking of a painting, but they relate to the composition of a building which is, in many respects, similar to the composition of a picture. In selecting his materials, and style, and site, and in arranging his masses of stones; in placing the lights and shades, and in producing an effect of symmetry and balance, the architect is doing much the same things that a painter does in composing his pictures. As to proportion, we may say, in a general way, that Doric temples were twice as long as they were wide, and once and a half as high as they



were wide. The column was about six times its diameter in height, while the capital was one-half one diameter in height.

There is no feature, ornament, principle or design, used by the Greeks that is not in use to-day. We still find almost exact reproductions of Greek buildings going up in the great cities of the world. Moreover, all the other styles that have come into being since the Greek, owe much to it although we find no domes, nor arches, nor towers in Greece. The Doric order was the one most favored by the Greeks, and, most of their best buildings are in that style. Although the most simple, and plainest of all, it is the most refined and seems all the more dignified by reason of this very simplicity, just as a person often seems more dignified by reason of simple manners. It was the most simple of ideas carried to the utmost perfection in its every detail.

To make further comparison with the Egyptian, we notice that the Greek made a gable to his roof. This was to ward off the weather, a thing the Egyptian never had to think of. It shows us how climate will bring out new features in architecture, and that, what might be beautiful in Egypt, might seem ridiculous in Chicago. Only the suitable is beautiful.

#### THE PARTHENON.

NOTE: For illustration, see Frontispiece.

In describing the Doric order, we have already described many of the essential details of this marvelous building, the work of Ictinus and Callicrates. It is the most complete of all the Greek temples — the most in-

tellectual of buildings it has been called. It is Doric, and was built by Ictinus, though Phidias was the sculptor. Exclusive of the steps on which it stood, it was 228 feet long by 101 feet wide, and 64 feet high. There were eight columns in the front and seventeen facing from each side, each about 34 feet high, and over 6 feet in diameter. The Doric column had no base, and a very simple capital as we have seen, but, like all Greek columns they were fluted. The Doric flutings are shallow, and generally twenty in number in each column. The moldings, though very few in number, were subtle in their design and curve.

The construction of the Parthenon was of the most solid and durable kind, and the material was marble. The roof may have been made of timber covered with marble tiles. The plan was very simple, consisting of an oblong space, at the end of which was the cella or sacred cell in which stood the statue of Athena, done in ivory and gold. The temple was surrounded by columns and at each end there was a portico eight columns wide and two deep.

We have referred to the sculptures of the Greek temple as its crowning ornament. While we cannot describe them, we may show where they were placed, that is, how they were used to decorate the building. The pediment or gable contained a famous group of figures, their positions so arranged as to fit into the shape of the gable. Most of those now left are preserved in the British Museum. Around the outside wall of the cella ran a frieze with sculpture almost flat, representing the great fête that took place at Athens every four years in honor of the

goddess Athena, whose statue, forty feet high, was the gem of the temple and stood within it. Another series of reliefs, called metopes, surrounded the building, alternating with the ends of the roof beams.

The sculptures which adorned the Parthenon were the finest the world has ever seen, and were the work of Phidias and his pupils. The marbles of the pediment were "in the round," but those of the frieze, also very famous, were in relief. This frieze represented all that the first city of Greece possessed of youth, beauty, nobility, and honor, assembled to render homage to the virgin goddess of the city of Athens. This fine procession displays the figures all in positions of ease and grace, and to the most ordinary incidents is given ideality and charm. The location of the Parthenon was not the least of its beauties. With other buildings, it crowned the Acropolis of Athens.

In the words of John Addington Symonds, who wrote beautifully of Greece as well as of Italy, "The Acropolis is the center of the landscape, splendid as a work of art with its crown of temples; and the sea, surmounted by the long, low hills, is the boundary to which the eye is led . . . in spite of time and violence, the Acropolis survives, a miracle of beauty; like an everlasting flower, through all the lapse of years it has spread its coronal of marbles to the air. The exquisite adaptation of Greek building to Greek landscape has been enhanced rather than impaired by the lapse of time.

"These buildings upon the Acropolis are as useful to the scenery around them as the everlasting mountains, as sympathetic as the rest of nature to the successions of

morning and evening which waken them to passionate life by the magic touch of color."

Mahaffy writes: "The Parthenon remained untouched and perfect all through the Middle Ages. Then it became a mosque and survived with little damage till 1687, when, in the bombardment by the Venetians, a shell dropped into the Parthenon, where the Turks had their powder stored, and blew out the whole center of the building. Eight or nine pillars at each side have been thrown down and have left a large gap, which so severs the front and rear of the temple, that, from the city below they look like the remains of two different buildings:—but the Venetians were not content with their exploit, they wished to take down the sculptures of Phidias from the eastern pediment; they were so clumsy about it that the figures fell from their places and were dashed to pieces on the ground."

The building of the Parthenon occupied about five years, and it was constructed of Pentelic marble.

Earth proudly wears the Parthenon  
As the best gem upon her zone.

Ornament, as we have already said, ought to express rather than conceal the structure of a building. In the Greek buildings we find this true in many ways. Take, for example, the Doric order of capital and see how well in the most simple way, it is adapted to hold the lintel in place. And wherever there is ornament in these temples, notice how it is used to plainly express the structure, just as we have said good architecture ought to do. Notice, for instance, that the vertical members

carry vertical linings. The flutings of the columns make vertical lines to the eyes. But, when we come to the parts that were horizontal, see how the lines made by the ornamental features emphasize this and band the parts together.

If we examine a Greek temple with reference to the table on page 11 we shall see that it had nearly all the elements of fitness, strength, and beauty. It was a perfect structure there and then, but we can probably think of many reasons why it would not be suitable for a modern business house in modern times.

#### OTHER GREEK BUILDINGS.

Having come to understand something in detail of the Doric order, we may take a glance at buildings of

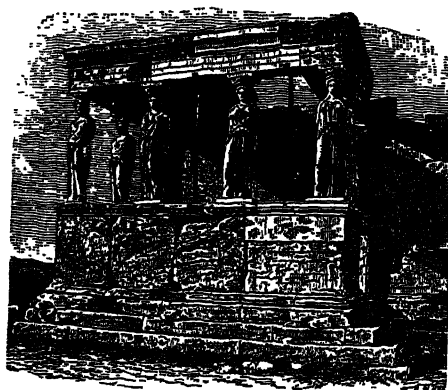


Fig. 15. Caryatids.  
Porch of the Erechtheum at Athens.

the other orders, that is, of the Ionic and the Corinthian.

The Ionic temples are not so well preserved as the Doric. The most important of the Ionic temples left to us is the Erechtheum at Athens. It differs from other temples in its irregularity. This makes it doubly interesting for it shows that although the Greeks nearly al-

ways adhered to one simple form, they could dispense with it when they wished. In the Erechtheum, they wished to provide for several shrines in one building, and under one roof. The irregularity they have made so beautiful and interesting that it is a wonder they

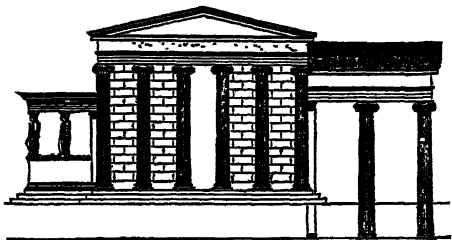


Fig. 16. The Erechtheum, Athens ; eastern elevation.

did not repeat the idea many times in other structures. Figure 15 shows the caryatids in the porch of the Erechtheum. A caryatid is the figure of a woman dressed in long robes, serving as a column to support an entablature. Figure 16 shows the eastern elevation of the Erechtheum. Notice the style of the capitals as well as the caryatids. Its two colonnades of different designs, its remarkable north doorway, and the famous caryatid porch to the south are unsurpassed. Another temple, that of Artemis (Diana) at Ephesus, was known as one of the seven wonders of the ancient world. We notice that the capitals in the pictures of these Ionic buildings show much more lightness and grace, delicacy and elaboration, than those of the Doric. A great example of the third, or Corinthian order is the monument of Lysicrates at Athens.

#### STORY AND ANECDOTE.

In the elder days of art  
Builders wrought with greatest care  
Each minute and unseen part.

Pope said of the Grecian style of house :

'T is very fine,  
But where d'ye sleep and where d'ye dine?  
I find by all you have been telling  
That 't is a house but not a dwelling.

All Greek temples faced the east and in front of them there was an altar for the sacrifices.

While we find such praise due to Greek perfection, let us remember that the Greeks worked on one type of building in one simple style for nearly six centuries.

As we look back to the Greece of the period of its great buildings, it seems to us like a vision of the distant past. And so it is. But when Phidias and Pericles and Homer looked at the monuments of Egypt, if they did look at them, they were viewing a past as old to them as theirs is to us. They too could talk of the ancients!

"Where on the Ægean shore a city stands,  
Built nobly, pure the air and light the soil;  
Athens, the eye of Greece, mother of arts and eloquence."

*Milton.*

Some one has said that classic art was national while Gothic art was devotional — that the pagan was the better artist, the Christian the better teacher.



"Acanthus Leaf."

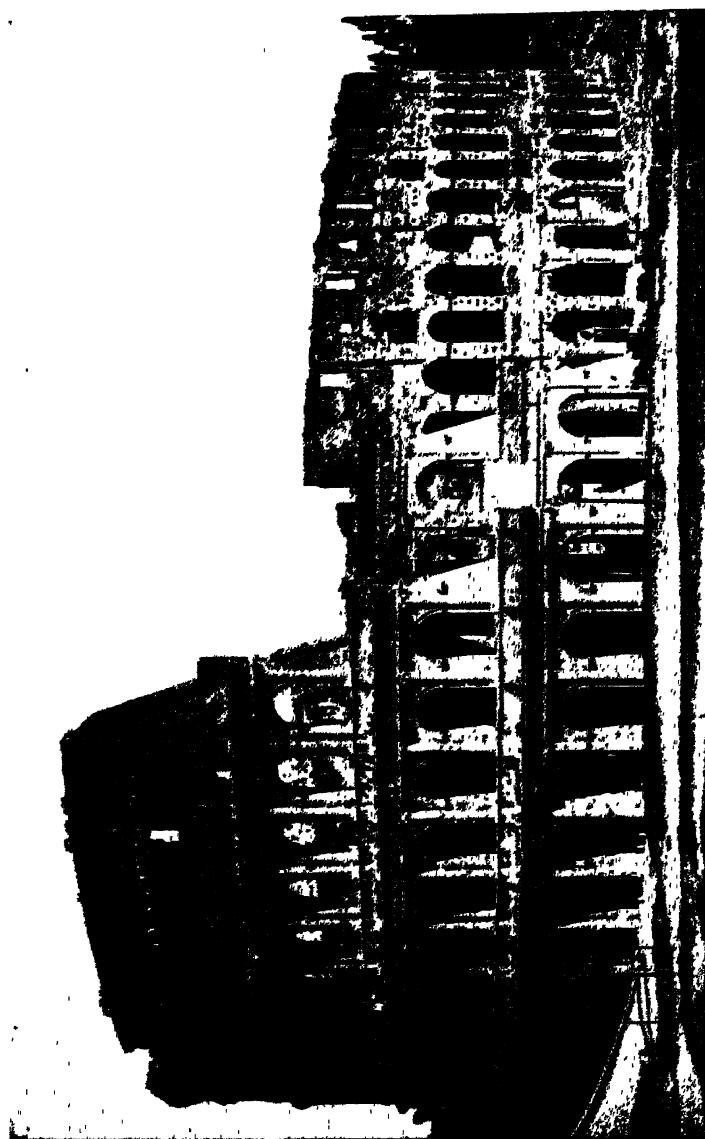
## ROMAN ARCHITECTURE

Roman architecture has been called merely Greek architecture imitated with greater richness but less refinement. No doubt the Greeks were greater originators, but the Romans were more practical, and, being great builders they extended the art in every direction. Yet, where they changed or modified the Greek, they did not always improve it.

The one great feature of the Roman architecture was the use of the arch. Arches had been made before, but the Romans made them the basis of their designs, and this changed the whole appearance of their buildings and created a new architectural style. The Greeks built in nearly straight lines, but the Romans used the arch, and hence, come the curves of Roman architecture, and of the later styles that grew out of it. Incidentally, the use of concrete, which is cement or ground rock and sand mixed while wet, and hardening into a solid mass as the mixture dries, changed the nature of their buildings, and made possible the dome of the Pantheon. The Romans did not confine themselves to building temples, but erected huge theaters, circuses, baths, and triumphal arches, all of which are characteristic of the work of this great people.

Like the Greeks, whom they conquered, the Romans were a free people. They were very war-like, and conquered the then known world and kept it and ruled it, too, for nearly a thousand years. They were a race of builders for several times as long as the Greeks, and that shows





us why we find so many more buildings, or remains of buildings, of the Romans than of the Greeks. It also shows why they were able to do greater things and bigger things. They were not so refined or learned as the Greeks and what they did in the way of buildings, and the other fine arts, was largely learned from the Greeks whom they had conquered. We may almost say that the chief business of the Romans of those times was to go to war and to conquer new provinces, and the triumphal arch, is one of the curious products of this time, being built to commemorate the victories of their Generals.

Thus, conquering, they grew very rich and became fond of amusements, which accounts for their great amphitheaters, and the extensive and luxurious baths. The amphitheater was a Roman invention. Of the buildings selected we shall study one amphitheater and one great temple dedicated to their gods, Even their gods they borrowed from the Greeks, changing them to suit themselves, and adding to their number to fit their different ideas.

To examine many of the buildings of the past, it has been necessary to dig into the earth, and when we visit Rome, we shall find that the Forum of the ancient city had to be excavated in order that the foundations of the buildings could be seen. In Egypt, where the buildings are much older, it is sometimes true that as many as eleven cities have been built, each on top of the last one buried. This is because the ground gradually rises where people live in cities. It may not be as much as a foot in one hundred years, but enough soil accumulates in one way or another so that by and by the buildings are half buried. With the buildings, much of the history of ancient times

has been dug out of the earth, and the science which tells about this is called archæology.

#### CHIEF CHARACTERISTICS.

We have already spoken of the arch as the one great characteristic of the Roman style. We all know what an arch is, but, could we define it in words? Put in the simplest language, an arch may be described as a vertical segment of wedge-shaped stones which support each other over an opening; or, another description is: that the arch is a method of supporting materials above a void or, of making the materials support each other by their mutual

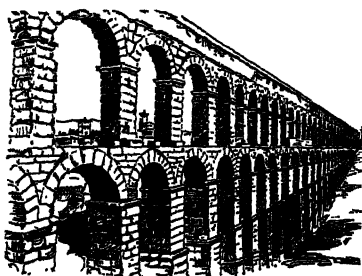


Fig. 18. Arch Construction.  
(Piers of an aqueduct.)

compression. Figure 18 shows arch construction over piers in an aqueduct. Aqueducts of masonry were very common in Roman times, for the Romans did not know that water might be carried in pipes, and would rise to the level of its

source, and they often built these immense structures, many miles in length, to supply cities with water. The one shown is at Segovia, Spain.

This arch feature has been used in subsequent styles, especially in the Romanesque; and we must try to find some easy way of distinguishing the older style, that is, the Roman. We shall find this partly in the use to which buildings were put, for it is easy to see the difference between a great amphitheater, like the Colosseum, and a

great Pagan temple, from their very shape and general appearance. All the buildings of the Roman style were Pagan, that is, they were for the worship of the heathen gods, in whom nobody now believes. The Romans had some of the same ancestry as the Greeks, but were of more mixed descent, and different in character, being warriors and practical men rather than artists and poets. When Rome conquered the Greek cities, Athens, Corinth, Syracuse, and the others, and enslaved their inhabitants,

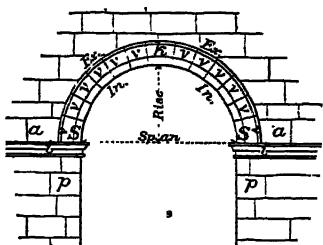


Fig. 19. Drawing showing the parts of an arch. a, abutment; v, voussoirs; s, springers; i, imposts; In, intrados; p, piers; k, keystone; Ex, extrados.

she was ready to learn their arts, and absorb some of their culture. "It is an unfailing rule, that, with the changes due to progress, the structural forms employed in the architecture of one age become the decorative features of the succeeding age," says Hamlin. Columns were very freely used in the Roman buildings and, so we see the columns used as the real support of a Greek temple adopted by the Roman as an ornament and often used to support nothing whatever, but merely a pleasing decoration. This was not so marked with them as in the Renaissance that developed from the Roman centuries afterwards. The Roman and Greek were the two great columnar styles, and we must soon study how the Romans made over the three Greek orders and improved upon them. The Roman arch made possible the impressive effect of great interiors unincumbered by columns or support such

as in the Pantheon, the noblest antique example of all.

In connection with Roman, we often hear of Etruscan architecture, and we should know something about it. It was the architecture of the Etrurians of northern Italy who had a higher and earlier civilization than the Romans themselves. Little is now left of their architecture ex-

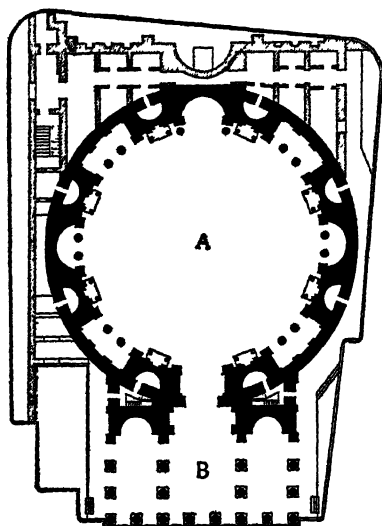


Fig. 20. Plan of the Pantheon, Rome. A, the rotunda; B, the portico. The light shaded parts represent existing foundations whence once arose the walls of the ancient baths.

cept remains of their giant masonry as at Perugia and their tombs, but we know that they used the true arch, and built circular buildings which the Romans imitated as in the Pantheon and the Castello St. Angelo.

When an architect wishes to build, he must first draw his plans, and specify every article that the builder is to put into the structure, the quantities of each, and how they shall be installed. It is easy to see what great knowledge and skill are required to do all of this accurately. But, much greater is the knowledge and skill required to conceive, in the mind, the structure before it is begun. This sort of thing had all been done before Roman times, but the Romans went far ahead of all their predecessors in the planning of their buildings.

Theirs was the pioneer ability in conceiving a logical plan without which all later developments of architectural art would have been impossible.

Among the greatest achievements of the Roman style was the bath, and one of these was connected with the Pantheon itself, the plans of which, with reference to the Pantheon are shown on page 54. The baths were great public buildings, very expensive and magnificent. There were separate places for warm, cold, tepid and hot baths; apartments for rubbing and oiling the body, as well as for conversation and amusement; and the whole was skilfully planned.

## THE ROMAN ORDERS.

The Roman orders are merely modifications of the Greek orders which have been fully described on pages 35 to 38. It is interesting, however, to compare the two by looking at the pictures. The Roman orders were five in number instead of three.

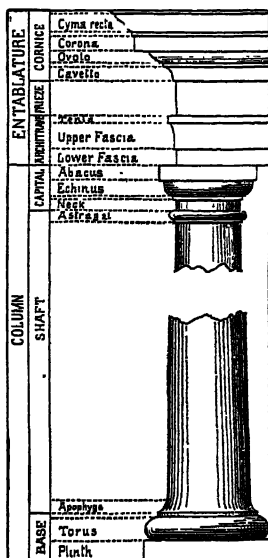


Fig. 21. Column (Tuscan Order), illustrating the terms applied to the several parts.

## TUSCAN ORDER.

The Tuscan was the name of the first or most simple. Figure 21 shows us a column of this style, with all parts clearly indicated. The Tuscan column admits no ornament and is never fluted, and it differs so little from the

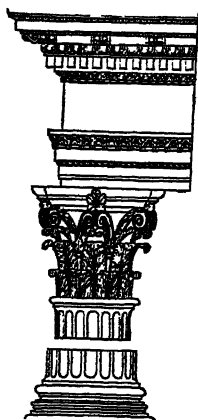
Roman Doric that it is generally regarded as being a variety of the latter.

#### ROMAN DORIC ORDER.

This order was so similar to the Tuscan as to be practically the same thing and takes its place between the Tuscan and the noble, simple Doric order of the Greeks.

#### THE ROMAN IONIC ORDER.

The Roman form of the Ionic order is similar to the Greek, but it gives to the capital four diagonal volutes and the sides of the abacus are curved. This is a very important difference, especially in determining whether a given capital is Greek or Roman. Note the curved abacus in Figure 25.



#### THE ROMAN CORINTHIAN ORDER.

The Roman Corinthian differed little from the Greek (Figure 22). It was the most ornate and slender of the five Roman orders, and bears the garlands of acanthus leaves as its distinguishing feature.

Fig. 22. Corinthian Capital.

This cut shows the Corinthian as it was modified by the Romans.

#### THE COMPOSITE ORDER.

This was a distinctively Roman order, although its features were copied from the Greek (Figure 23). It was called composite because the capital which characterizes it is a compound of those of the other orders. It

borrowes the quarter-round molding from the Tuscan and Doric, a rank of leaves from the Corinthian, and volutes from the Ionic period.

#### THE COLOSSEUM.

No Roman town of importance, either in Italy or in the Colonies, was considered complete without its amphitheater. The most important of those still existing are at Rome, Verona, Pola, Capua, Pozzuoli, and Pompeii, in Italy; at Syracuse, in Sicily; and at Nimes and Arles, in the south of France. Figure 24 shows the interior of an old Roman theater in Asia Minor.

The largest and most famous is the Colosseum, built on the site of Nero's "Golden House" by the Flavian Emperors, Vespasian, Titus, and Domitian, and opened for use in the year 80 A.D. Like all the others, it is

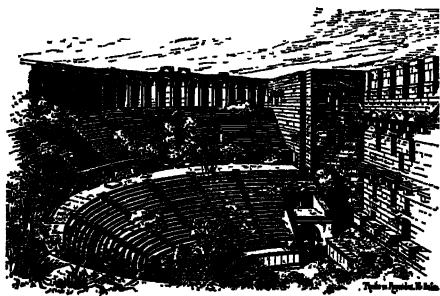


Fig. 24. Interior of old Roman Theater in Asia Minor.

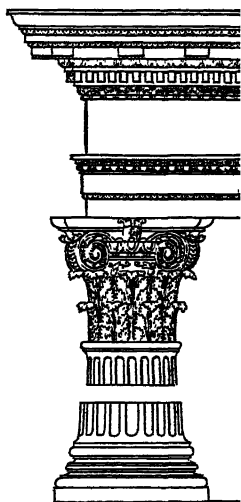


Fig. 23. Composite order. (Roman.)

elliptical in plan, being about 620 feet in length by over 500 in width. The arena itself is about 290 feet by 180 feet, and around this are grouped the seats which rise in tiers, one above the other,



supported by vaults of concrete and by piers of stone. Each section of this great auditorium has its separate entrance, which opens into a wide corridor running all around the building. As with our theaters, each seat was lettered or numbered, and the tickets of admission bore corresponding marks. The rooms for gladiators, the dens for wild beasts, and store-rooms for scenery and so forth were under the level of the arena. The beasts were prevented from jumping among the people by the walls around the arena, on top of which were metal railings.

The entire area of the auditorium was covered by an immense awning stretched from masts, fixed on the outside of the building, to the top of other masts around the arena. At least 40,000 spectators could be provided with seats, and some authorities think as high as 80,000 people sometimes attended at once.

Ruined as it now is, no building in existence gives such an impression of imposing size, and apart from all historical and sentimental interest, the power of this building grips one like a vise. The imposing appearance of the Colosseum is due far more to the sweeping lines of the entablatures, and to the re-duplication of parts, than to its mere size. The lowest story is of the Doric order, the second is Ionic, the third Corinthian and the fourth Composite.

Firm Doric pillars formed the solid base,  
The fair Corinthian crowned the higher space,  
And all below is strength, and all above is grace.

There is a certain logic in thus having the plainest, simplest, and in appearance the strongest of the columns

on the bottom tier, which must support those above it. The columns on the exterior of the Colosseum were what is known as "engaged columns." They were not there to support the weight above, as in the Greek temples, for that was done by the walls, but they were made to appear as though they did. They were built into the wall so as to look as though a part of the column were concealed. This is a departure from the Greek ideal as well as from our statement of the principle that forms in architecture should express their use; that is, that they should have a real constructive meaning. The Romans here used a Greek form for ornament only, but their walls were so massive that the structure looked much better for this ornamentation, and it was fitted in appearance to the character of the building. This excuses the Romans, who did not pretend to be following out Greek ideals. But we shall see how a certain school of architects, hundreds of years later, carried this meaningless imitation to such an extent as to build columns in this same way into many buildings now held in low esteem. Figure 25 shows engaged columns. These are semi-columns from the Maison Carée at Nîmes, France.

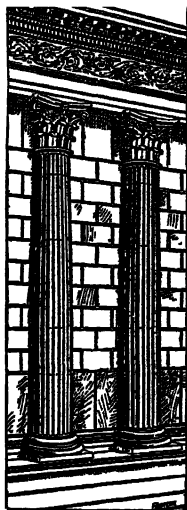


Fig. 25. Engaged columns from the Maison Carée at Nîmes, France.

We may note in the Colosseum that its oval shape grew out of the fact that it was built to afford a view of the

rings or arena within. Emerson says that any one may see its origin who looks at a crowd running together to see a fight, an accident, or any unusual appearance in the street. The first comers gather round in a circle; those behind stand on tiptoe; and further back they climb on fences or window-sills and so made a cup of which the object of attention occupies the hollow arena. The architect only pushed up some benches and enclosed the cup with a wall—and behold a colosseum! Emerson tells this to illustrate his principle: “Whatever is beautiful rests on the foundation of the necessary.”

#### STORY AND ANECDOTE.

Nothing is known with certainty as to the architect of the Colosseum, though tradition ascribes the building to Gaudentius, a Christian martyr who, afterwards, suffered on the spot. At its dedication, there were battles and combats of gladiators, and five thousand animals were slain within its circuit. The show was crowned with the flooding of the arena and a sea-fight.

Great as is the Colosseum, another Roman building, the Circus Maximus, now entirely obliterated, was more than four times as large, and contained seats for three hundred and sixty thousand people.

In the year 1332, a bull-fight after the fashion of the Moors and Spaniards was celebrated in the Colosseum itself and the spectacle was described in a diary of the times. The lots of the champions were drawn by an old and respectable citizen, and the gladiators descended into the arena or pit to encounter the wild bulls on foot, as it

would seem, with a single spear. Combats in the amphitheater were dangerous and bloody.

Every champion successively encountered a wild bull, and the victory may be ascribed to the quadruped since no more than eleven were left on the field, with a loss of nine wounded and eighteen killed on the side of their adversaries. Some of the noblest families might mourn, but the pomp of the funerals afforded a second holiday to the people.

The topmost seats were for women of the lower classes and no ticket was required for the gallery, so that to gain a seat here it was necessary to be at the amphitheater before sun-rise.

It is said that Gregory the Great presented some foreign ambassadors with a handful of earth from the arena as a relic for their sovereigns, and, upon receiving the gift with disrespect, he pressed it in his hands, whereupon blood flowed from the soil.

Matthew Arnold says of the great ruin: "I gazed upon the scene with intense and mingled feeling. The world could show nothing greater."

Condemned criminals made up a large contingent of the fighters in the arena. The gladiators marched into the amphitheater in processions and saluted the Emperor with the words: "Hail, Cæsar, those about to die salute thee."

When a gladiator was wounded severely, the people shouted "Habet," and if they wished the wounded man to be killed, they turned up their thumbs. If a man had fought valiantly, they often spared him. The amphitheater

theater could be flooded when nautical combats were exhibited and the spectators could watch the slowly failing struggles of the drowning. The air was cooled by fountains scented with perfumes, and, as the show lasted through the whole day, food had to be distributed at various intervals.

"They who will," writes Charles Dickens, "may have the whole great pile before them as it used to be, with thousands of eager faces staring down into the arena. It is the most impressive, the most stately, the most solemn, grand, majestic, mournful sight conceivable."

The name Colosseum is probably derived from its great size; it is colossal. Byron quotes the following saying:

While stands the Colosseum, Rome shall stand;  
When falls the Colosseum, Rome shall fall;  
And when Rome falls, the world.

Once or twice every winter, the Colosseum is illuminated.

#### THE PANTHEON.

The word "Pantheon" may mean "very sacred," but the usual interpretation is "Temple of all the Gods."

The Pantheon is unique in Rome — in the world — as a building which has been in use for nearly 1800 years and still retains its old walls and vaulting. The bronze doors, though much restored, are originals. The doorway is 40 feet high and 20 feet wide, and the old bronze doors, the oldest and finest in Rome, are 26 feet 6 inches high, a bronze lattice filling the rest of the space. The interior is remarkable. All the light enters from the round hole in the dome which is about 28 feet in diame-

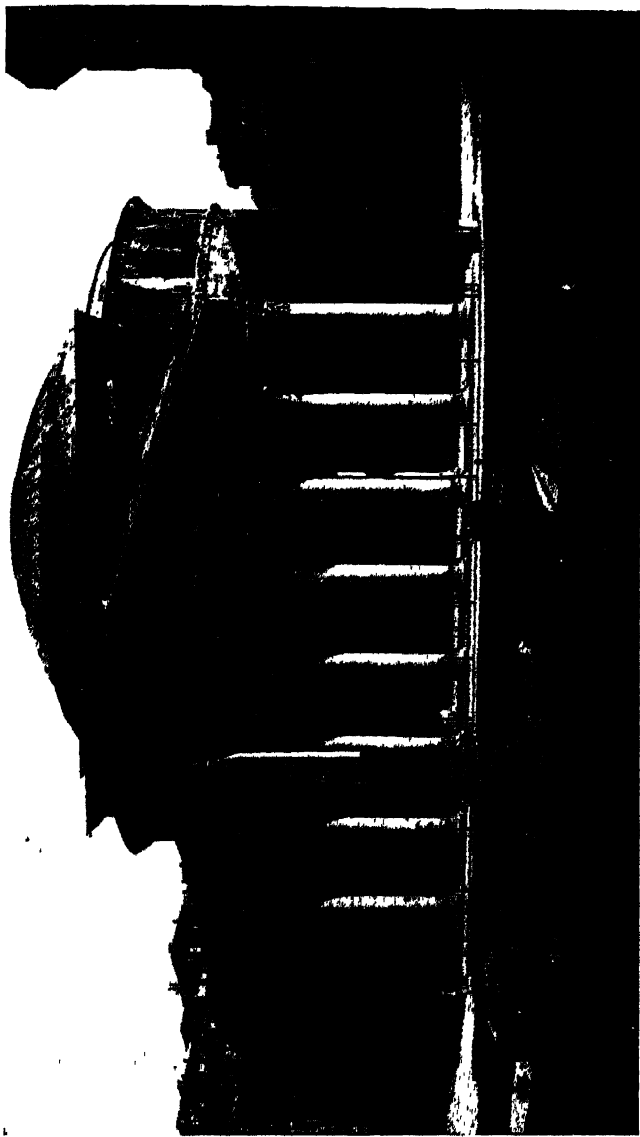


Fig. 26. The Pantheon, Rome.  
See description on pages 62 to 65.

ter. Yet this light is ample and, what is more important, it is perfectly evenly distributed. No lighting ever devised gave so fine an effect.

There are really two parts to the Pantheon, the circular part or rotunda and the portico. The portico was originally a part of a temple built by Agrippa, but was not put in its present place until some time after the great rotunda was built by Hadrian (117 A.D.). It is poorly joined to the main edifice. Notice the sixteen columns which are of red and gray granite. The pitch of the roof of this portico is steeper than that of the Greek temples, and than other Roman ones. Place your thumb over the apex of the gable so as to produce the effect of lowering the gable and see if you do not think it improves the looks of the building. The name of Agrippa still shows on the front, but the sculptures of bronze, which once filled the pediment, have disappeared. Twelve superb granite Corinthian columns 50 feet high support the portico.

The rotunda is splendidly preserved; the interior has all the appearance of the original paneling of marble. It measures 145 feet in diameter internally, but the walls are 20 feet thick—to support the great dome that rises to a height of 140 feet. Around the rotunda are seven niches alternately rectangular and semi-circular, and fronted by Corinthian columns.

There is a quiet magnificence about this building which is unequaled. We visit many churches in a trip to Europe, and many galleries, and see many great buildings, but there is none that takes a stronger hold upon our feelings and our memory than the Pantheon.

There is an important point to note about the dome. To build so huge a dome of separate pieces of stone was a thing no one could have done. Hundreds of years later the problem of building such a dome at Florence was more than all the architects could engineer until one great man solved it. The reason for the difficulty is the great thrust or pressure outwards upon the walls, which so heavy a weight induces. But the

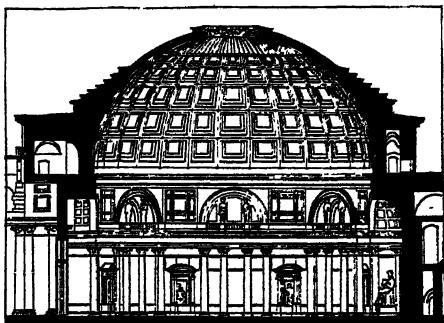


Fig. 27. Sectional view of the Pantheon, Rome.

dome of the Pantheon is practically of solid concrete, so that there is not the same outward pressure, but chiefly a downward pressure. The dome rests almost like a solid lid upon the walls beneath. Figure 27 is a sectional view of the Pantheon showing the use of vaulting, arches, and columns, and Figure 20 shows the ground plan, and also that of the baths, which were, formerly, a part of the structure.

#### STORY AND ANECDOTE.

It is said that, while the Emperor Charles V was in Rome (1536), he ascended the roof of the Pantheon accompanied, among others, by one of the Crescenzi family. The latter youth afterwards vaunted that he had been half-a-mind to push his majesty into the abyss; and so



to have avenged the cruel sacking of the city ten years previously. Hearing it, his father retorted bitterly: "We Crescenzi were used to do things, not to talk of doing them."

It has become a burial-place of painters, among them Raphael. A picture of his funeral by Rogers follows:

When Raphael went,  
His heavenly face the mirror of his mind,  
His mind a temple for all lovely things  
To flock to and inhabit — when he went,  
Wrapt in his sable cloak, the cloak beware,  
To sleep beneath the venerable Dome,  
By those attended who in life had loved,  
Had worshiped, following in his steps to Fame  
(’T was on an April day when Nature smiles),  
All Rome was there . . . all were moved:  
And sighs burst forth, and loudest lamentations.

The Pantheon contains many tombs and valuable relics. Once a year the great doors are opened wide to admit the crowds who throng to pay their tribute of respect and love to the remains of the assassinated King Humbert. A circular row of great candles, each many feet high, is placed around the interior, and cart-loads of flowers are used for decoration. A book is provided in which visitors at this time write their names, and it is a solemn and beautiful sight to watch the leading citizens of Rome come to pay their respects.

Byron says of the Pantheon:

Simple, erect, severe, austere, sublime —  
Shrine of all saints and temple of all Gods,  
From Jove to Jesus — spared and blessed by time,  
Looking tranquillity, while falls or nods

Arch, empire, each thing round thee, and man plods  
His way through thorns to ashes — glorious Dome!  
Shalt thou not last? Time's scythe and tyrants' rods  
Shine upon thee — sanctuary and home  
Of art and piety — Pantheon! Pride of Rome!

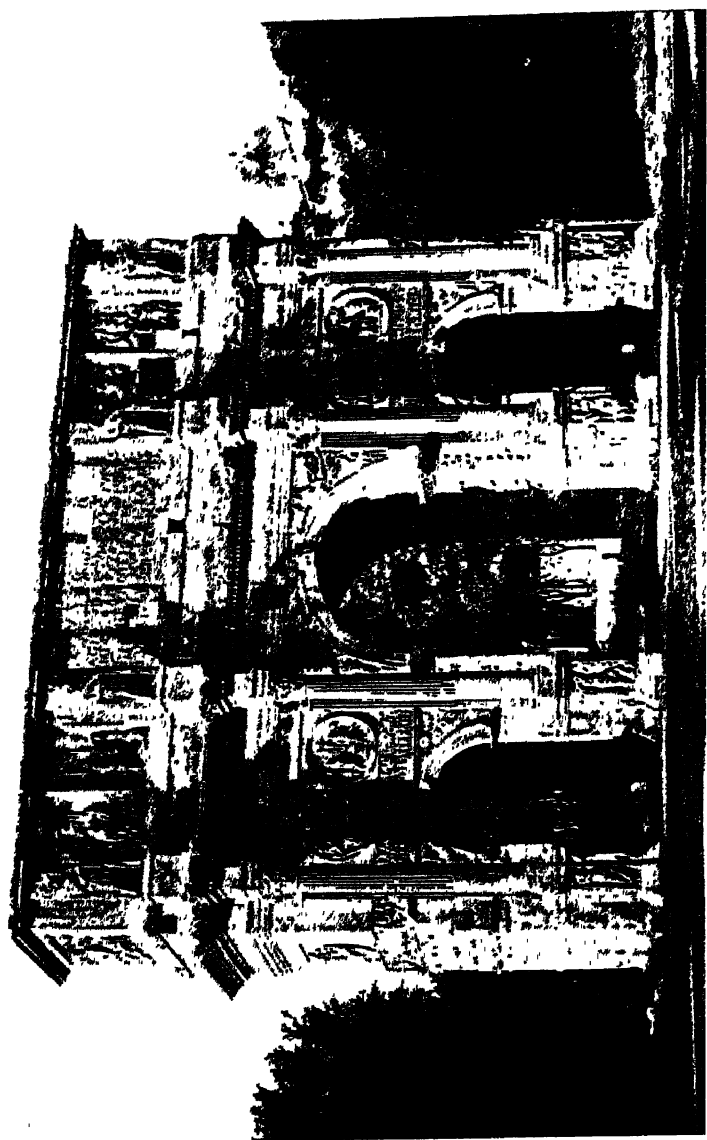
## OTHER BUILDINGS OF THE ROMAN STYLE.

So many and so wonderful are the buildings of this style that we cannot do more than mention a few. The baths, or *thermae*, were the greatest of all in size and splendor, and were fitted up with the greatest luxury. Important parts of some of these remain. Remains of a few private houses and great palaces are still to be seen, and the triumphal arches are the admiration of all travelers.

It has been said that Architecture is the only one of the fine arts that is useful. But some of these structures, such as the triumphal arches, were purely ornamental. These triumphal arches, as has been mentioned before, were built to signalize some great military victory, and at one time there were nearly forty. The chief ones now to be seen at Rome are the Arch of Titus, and the Arch of Constantine. Figure 28 represents the Arch of Constantine. The exterior was always elaborate; done in cut stone, and marble with columns or pilasters. The pilaster was in imitation of a column, but was only a projection from the wall of a flat rectangular form. Above, there was a rich entablature with inscriptions.

## ARCH OF CONSTANTINE.

In general effect, the most impressive of Roman triumphal arches is the Arch of Constantine, dedicated in



A.D. 315. It has three archways. Each front is ornamented with four Corinthian columns, on pedestals, supporting blocks of the entablature, which, with the dies resting on them, themselves in turn, form pedestals for statues.

Above the entablature is a high attic, the central compartment of which bears inscriptions; the others contain reliefs taken from the monument of Trajan. Over the two smaller side arches are four circular medallions showing scenes from Trajan's life. Beneath, there is a narrow band with sculptured scenes from Constantine's campaigns.

In the spandrels of the central arch are carved victories, while in the spandrels of the side arches are river deities and nymphs.

Notice other reliefs on the side walls of the arches. It is upon the reliefs that the claim to excellence of this arch chiefly rests.

#### ARCH OF TITUS.

This arch is one of the simplest in its scheme, and yet the most effective of the Roman triumphal arches. The capitals of the engaged columns at the angles of the piers are the earliest examples of the Composite order. On the keystones are sculptured an armed female figure and a male divinity holding a cornucopia; these represent a pair of deities worshiped by the army — Virtus (manliness) and Honor (Glory). Notice the reliefs in the passageway. That on the north side portrays Titus in his sacred car; he is crowned by victory, and the horses are held by Rome herself. On the south side we see the

procession approaching an arch represented in perspective. The treasures of the temple of Jerusalem, including the seven branched candlestick and the golden trumpets, are being carried on stretchers. The reliefs of this monument are taken by critics to mark an advance, an epoch, in the history of Art. They show scenes with fidelity and give the illusion of real events in the open air.

We know very little of the lives of architects at the time of Rome. The Emperors (of whom Hadrian was one of the greatest) themselves were active in directing their great buildings.

Vitruvius was a famous Roman architect and military engineer under Cæsar and Augustus. His treatise on Architecture, in ten volumes, is the only surviving Roman treatise on the subject.

## EARLY CHRISTIAN ARCHITECTURE

We have spoken of how one style of architecture develops from another, and we are now to look briefly at a form which is chiefly important as being a link in the chain of styles.

There are not many important buildings of the Early Christian style. It came into being at a time when not much building was going on—that is, during the early centuries of Christianity—and what good examples there are, are nearly all churches. During the first three centuries of the Christian era Christianity was under the ban of persecution, and there was not much chance for it to manifest itself in great architecture. But, early in the fourth century, Constantine became Emperor and was converted to Christianity. He made Christianity the State religion.

Constantine founded three large basilicas in Rome, all of which have been buried or destroyed. The chief objects to be thought of in these churches was to build without too much cost, to do it quickly, and to accommodate large congregations. A great structural principle which they used in roofing, or spanning spaces, is the truss. This is a frame of beams, or of beams and rods, so disposed and fastened as to make a continuous support or bridge across an open space. The truss was used by the Romans in roofing their basilicas.

## CHIEF FEATURES.

As the great Romanesque style grew out of this early Christian architecture, let us look at the main features of the earlier and simpler style. Some of the most important of these features are preserved also in the Gothic church and we shall wish to see, as we very easily can see, how they grew out of this first early Christian style. The buildings of this style were simple in form, but of noble proportions, and, though very plain without, they were often gorgeous within. A notable circumstance about the early Christian work is the fact that its monuments were built largely from ruins and fragments quarried from earlier Roman work. No doubt much beauty was ruthlessly destroyed in this way.

Before the Christian era Cato borrowed from the Greeks their hall of justice; the first one being erected in Rome about 190 years before Christ. These basilicas usually had a large hall connected with a portico, and encircling galleries often enclosed the whole.

When Christianity became a State religion these buildings came to be used for religious purposes.

The basilica always had a central aisle; and this nave or central portion was usually separated from the side aisles by rows of columns. At the further end of the nave was the sanctuary or apse, in front of which stood the altar. In front of the whole was usually an atrium or fore-court, surrounded by a covered arcade. The exterior was extremely plain, and the interior resplendent with marbles and mosaics. A wooden roof covered the edifice. Figure 29 is the ground plan of a basilica which

will show us the general arrangement, although this basilica does not happen to be an old Roman example. Above the columns that surrounded the nave there usually arose another story called the clerestory (clear story), the walls of which were pierced with windows. This is a feature which persists through later styles, and it is interesting to see its simple and plain beginning. Some of the Egyptian temples had clerestories, but the European examples date back only to early Christian architecture. For a plain example of the clerestory rising above the first roof, look at the picture of Pisa on page 00.

In future chapters, in looking at the growth of the Romanesque, and then of the Gothic, we shall compare them and see how they developed in succession from the Early Christian.

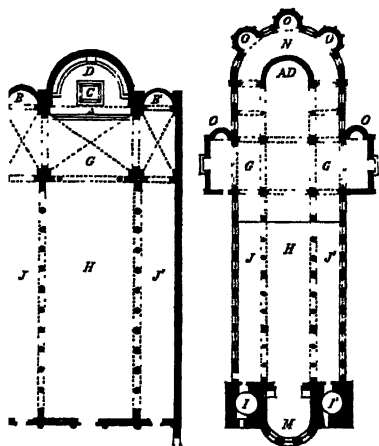


Fig. 29. Basilicas.

Left-hand plan is a typical one. Right-hand plan is a German one showing variations. AD, apse; BB', secondary apses; C, high altar; D, bishop's throne; G, transept; H, nave; I, I', towers; J, J', aisles; M, western apse; N, aisle surrounding chief apse; O, O, apsidioles.

#### MOSAIC.

One of the richest of all interior decorations is mosaic. It begins to be used prominently in the early Christian



churches and has continued to be popular to this day. On account of its great permanency, people valued it for monuments which they wished to have endure forever.

Mosaic consists of a pictured decoration, or a decoration usually made of small pieces of colored glass set in cement against a wall or other surface to be decorated. At one time, the manufacture of mosaics for commercial purposes became a great industry in Italy. As many as twenty-five thousand different shades of colored glass were kept in one factory so that it was possible to imitate any possible shade or tone from a painting that was to be copied. At a little distance the mosaic copies of paintings cannot be told from the original paintings. Those large mosaic copies of paintings, that adorn the interior of St. Peter's at Rome, would deceive the most expert, so much do they carry the illusion of an oil painting. Other mosaics do not attempt to imitate anything, but to produce beautiful decorations or pictures for the walls. Some of these, like the ones in St. Mark's at Venice, have an almost inconceivable richness and beauty. Among the noted mosaics of the world are those at Ravenna, Italy, which people from all parts of the world go to visit and to study.

#### PRINCIPAL MONUMENTS IN THIS STYLE.

One great basilican church, one of the most wonderful churches in the world, is "St. Paul's Outside the Walls" at Rome. It is not the original church, as that was burned; but the new one is almost exactly like it, and very large and rich and beautiful; one of the great sights of Rome to-day. Another famous basilican church, and

one of the most perfect, is S. Appollinare Nuovo at Ravenna. We shall wish to turn back and remember the features of these simple structures to see how the elaborate edifices of the Romanesque and Gothic still preserved their essential features.



St. Pauls, outside the walls, Rome.

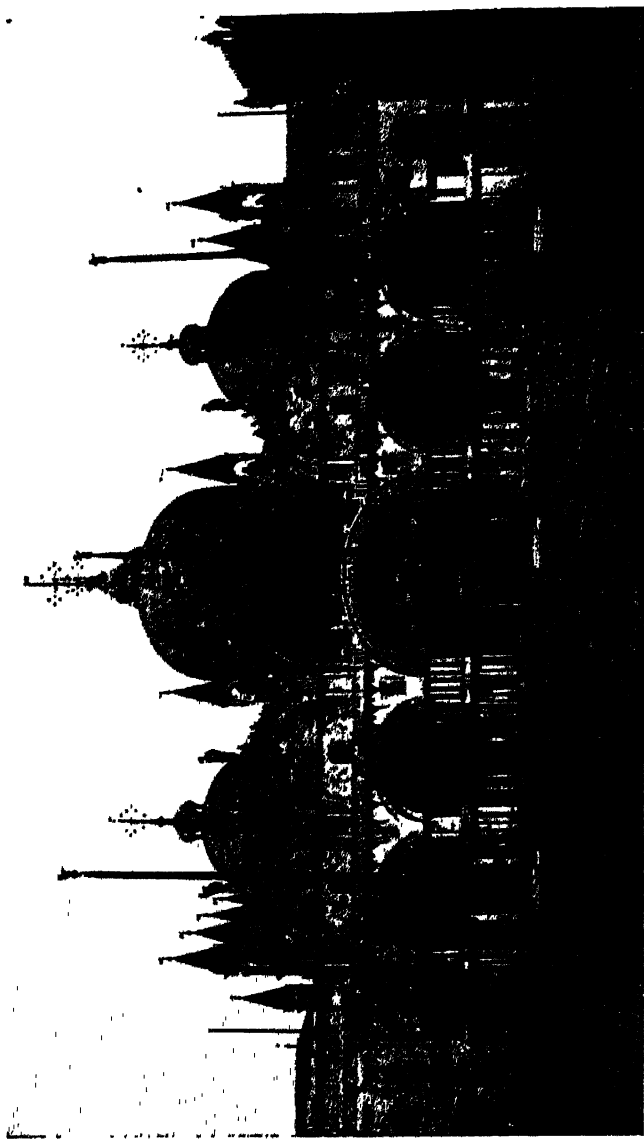


Fig. 30. Façade of St. Mark's (San Marco), Venice.  
For description see pages 78 to 83.

## BYZANTINE ARCHITECTURE

Byzantine architecture followed after Rome had declined. At this time in the world's history, the seat of power shifted to Constantinople, and because Constantinople is Eastern, or Oriental, we may expect architecture to follow the ideas of the Orient. Wherever power and wealth are located, there we see great buildings arise. The Byzantine, although it borrowed from the East, was largely original and became a living type of architecture. The Byzantine has been called the first of the great Christian styles. When Constantine's basilican church at Constantinople was burned, a new one was commenced there by Justinian in 532 and was dedicated in 537. This was Sancta Sophia, the great triumph of Byzantine architecture. From this time to the time when St. Mark's was built in Venice, that is, in 1100, a number of important churches and palaces were erected in this style, and its influence is felt in the world to this day. Among the important examples should be mentioned S. Vitale at Ravenna and S. Lorenzo at Milan.

### CHIEF FEATURES.

One great feature of all Byzantine architecture is the large central dome, usually surrounded by other smaller domes. Moreover, the Byzantine dome was itself of a peculiar kind. It consisted really of two parts — the

top part being a semi-circular dome built on top of the lower part of a larger semi-circular dome which was begun but cut off at a certain point. The relative sizes of the two parts are determined mathematically. The

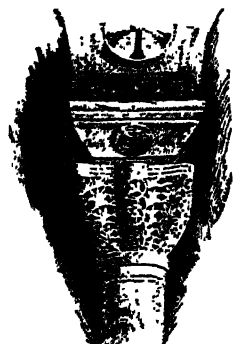


Fig. 31. Byzantine Capital. From the Church of San Vitale, Ravenna.

lighting came from small windows in the dome. The ground plan represents a cross and is roofed by five principal domes. Byzantine churches were usually built first without ornament, and of plain masonry. The ornamentation was of the applied type, and might be added years after the structure was completed. Figure 31 is an example of Byzantine capital from the Church of San Vitale, at Ravenna, Italy.

An important feature was the richness of the interior decoration, often of mosaic and full of oriental color. Instead of supporting their domes by the great thickness of the walls, they so made their walls, that one pressure might neutralize another, and out of this germ grew the abutment, the germ of the Gothic style.

#### ST. MARK'S, VENICE.

St. Mark's is not a very large church, and owes its greatness to its variety of interest and to the multitude of its decorations, both without and within. Its color distinguishes it from all the other great buildings we have studied. Instead of gray stone, or even white and black, it is entirely covered with the richest of colored marbles,

and adorned with many columns, rich with mosaic work, porphyry, and gold.

Comparing St. Mark's with any other church, we are apt to inquire why it is so different. Why this unheard-of richness of color like a dream of the Orient? The reason for the oriental tinge to the architecture of St. Mark's will be seen in the fact that Venice was so situated as to have trade relations with the Orient, so that her merchants brought home many things that were oriental. The rich silks and highly colored stuffs thus brought in made the Venetians like such things. In their art, the Venetians, Titian, Tintoretto, and the rest, were the greatest of all colorists. Many of the colored marbles, so commonly used in Venice as a veneer over their brick walls, were brought in on the ships from foreign ports.

We have spoken of Sancta Sophia as the greatest triumph of Byzantine architecture. St. Mark's is a very close rival. St. Mark's was begun early in the ninth century, partly burnt in 976, and immediately rebuilt on its original plan.

Thus it remained until 1063, when it was so altered as to completely change its plan and appearance—that is, it was then rebuilt as a Byzantine edifice. It has three façades, the chief one facing St. Mark's Square, another a market-place, and the third the waters of the lagoon which is nearby. The façade, facing St. Mark's Square, has five large arches, over the central one of which are the famous bronze horses. These are believed to be of Grecian origin, but no one knows for certain. Napoleon captured them in 1797 and took them to Paris

for the top of a triumphal arch; but after the peace of 1815 they were returned by France. A mere catalogue of the treasures contained in St. Mark's would make a large book, and anything like a description of the notable features of the outside would make another. In a well-known historical guide to Venice nearly one-third of the whole is devoted to St. Mark's. More can be gathered from the picture than from any description. Ruskin says:

"There rises a vision out of the earth, and all the great square seems to have opened from it in a kind of awe, that they may see it far away:—a multitude of pillars and white domes, clustered into a long, low pyramid of colored light; a treasure-heap, it seems, partly of gold, and partly of opal and mother-of-pearl, hollowed beneath into five great vaulted porches, ceiled with fair mosaic, and beset with sculpture and alabaster, clear as amber and delicate as ivory."

Upon entering the church, all is lost in twilight, to which the eye must become accustomed before the form of the building can be traced. Exteriorly, Byzantine churches were generally plain, but San Marco is an exception. Hundreds of monoliths, or colonnettes, of rarest marbles and porphyry, cluster around its doors. For years it was the ambition of every wealthy Venetian to beautify his city; to make it the most splendid in the world. Whole areas of the exterior of San Marco are covered with veneering of the most precious and richly colored marbles imaginable. The great bronze horses, brought by Napoleon, prance over the porch, the domes gleam in the sun, the mosaics glitter from the lunettes

above, the great flags flutter from the three poles in the square, the color is dazzling in the sun, the ensemble is the most fascinating façade in the whole world.

Consider, too, the surroundings; the bay and its lagoons and rich red and yellow sails, and the songs of gondoliers. A step away are the Doges' palace and the courtyard attached, the famous clock-tower on the other side, the great campanile, and the royal palace, facing on the square of San Marco,— a great paved open-air drawing-room where the band-concerts and lottery-drawings are held, and where the pleasure-loving Venetians flock daily to sit in the thousands of chairs, or pace up and down in the sunlight in front. What a setting it is, for the most richly decorated church in all the world! It is a scene of splendor far removed from anything else we may see in all Western Europe. It is an architecture of color rather than form, we may say. Much of the beauty of a building is due to its location.

Emerson says:

“ The pleasure that a noble temple gives us is only in part owing to the temple. It is exalted by the beauty of sunlight, the play of the clouds, the landscape around it, its grouping with the houses, trees, and towers in its vicinity.

In the “ Lady of the Lake,” Scott shows his sense of what an appropriate landscape is to a building:

On this bold brow a lordly tower,  
In that soft vale a lady's bower,  
On yonder meadow far away  
The turrets of a cloister gray.



There are also different kinds of beauty in the different points of view. When we draw near to a noble building the lines that made it pleasing from a distance fall apart, and we see the smaller details. It may be that the frowning battlements that "strike awe and terror on the aching sight" at a near view, will, from a distance, blend with a calm landscape, and create a peaceful sylvan scene, — like Windsor.

The tapering spires and the broad-eaved cottages, that are so beautiful in the lakes and mountains of Switzerland, would look poor and absurd in Venice.

The buildings of Venice are mostly intended to be seen from the front only, where

The sea is in the broad, the narrow streets,  
Ebbing and flowing, and the salt seaweed  
Clings to the marble of her palaces.

The interior ornamentation, with which San Marco is almost completely covered, is mosaic (representing chiefly Biblical scenes), and costly marbles. The backgrounds of the mosaics were usually in gold. Slabs of rarest marble with rich carving cover the rest of the walls.

Ruskin says: "There opens before us a vast cave hewn out into the form of a cross and divided by many pillars into shadowy aisles. Around the domes of its roof the light enters only through narrow apertures, like large stars, and here and there a ray or two from some far-away casement wanders into the darkness and casts a narrow phosphoric stream upon the waves of marble that heave and fall in a thousand colors upon the floor.

What else there is of light is from torches or silver lamps burning ceaselessly in the recesses of the chapels; the roof sheathed with gold and the polished walls covered with rich alabaster, give back at every curve and angle some feeble gleaming to the flames; and the glories around the heads of the sculptured saints flash out upon us as we pass them, and sink again into the gloom."

St. Mark's has been called a jeweled casket. Its core is of brick. The beautiful marbles are veneer. In all, there are over 40,000 square feet of mosaic. The pavement, wavy and uneven from settling, is wrought in quaint and beautiful Byzantine designs.

The architect of St. Mark's is unknown and much controversy has been maintained on the question whether he was a native Venetian or an imported Greek.

An inscription in Latin, placed where it would be seen by the Doge entering from his palace, translated, reads in part:

"Love justice, give all men their rights, let the poor and the widow, the ward and the orphan, O Doge, hope for a guardian in thee. Be compassionate to all; let not fear nor hate nor love of gold betray thee."

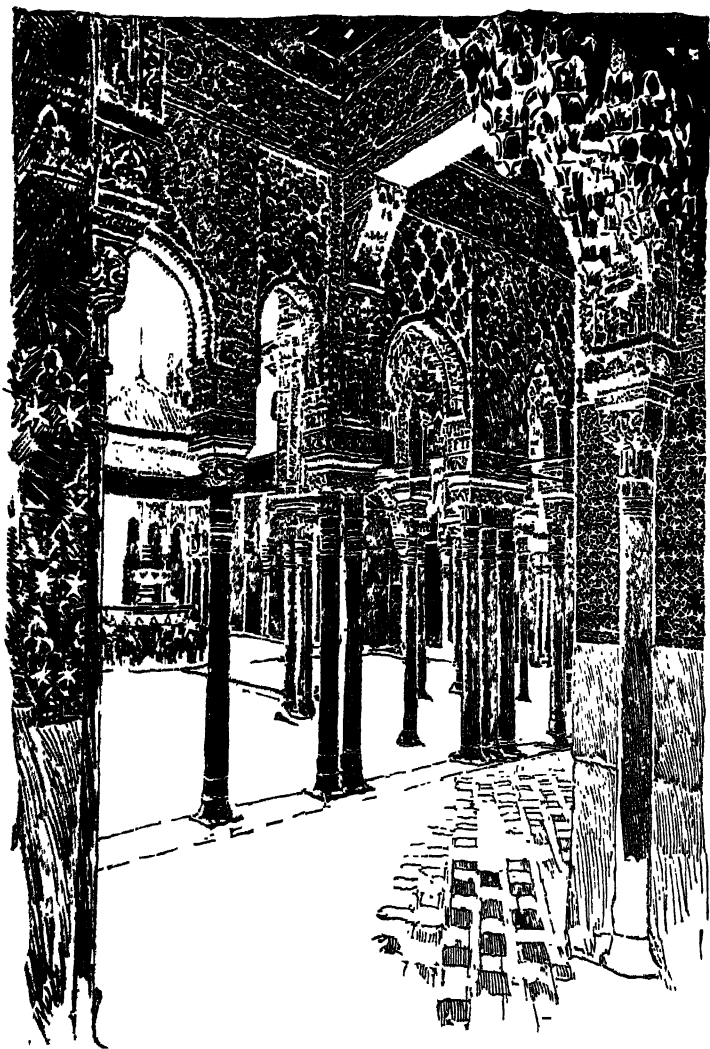


Fig. 32. The Court of Lions.  
The Alhambra.

For description see pages 89-91.

## SARACENIC ARCHITECTURE

This style is sometimes called Moslem or Mohammedan, because it was produced by the followers of Mohammed. It is also called Moorish. The Moors were a well-formed race, with fine oriental features and expression of countenance. Formerly the inhabitants of Northern Africa, they had conquered and overrun Spain and were not finally expelled until after 1492. In the meantime, they had built up a civilization of luxury. Granada was their city; the Alhambra was their stronghold. The Mohammedan Kings of Granada for many years fought the Christian Kings of Castile and, when finally driven out, they founded the states of Algiers and Tunis, in Africa, now so familiar to tourists.

The architecture of the Alhambra is the architecture evolved by the Mohammedan races. Mohammed was born in 569 and died in 652. His followers made such conquests as the world had seldom known. Persia, Egypt, Palestine, Syria, Arabia, and Northern Africa fell under their influence, and, with it all came this new architecture, quite distinctive in its features, so that we may know it wherever we see it. It was chiefly an architecture of temples and mosques, for the Arabs and Moors were nomadic; roaming the desert and living in tents. But, in some places they built cities, and tombs, such as the tombs of the Caliphs, and their palaces

## CHIEF FEATURES.

The Saracenic was very different from any style that had gone before. Its chief characteristics are in the use

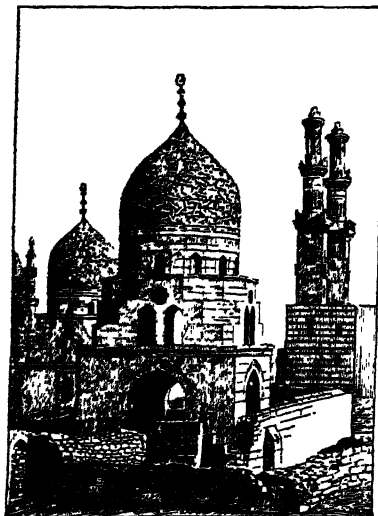


Fig. 33. Tombs of the Caliphs, Cairo, Egypt.

of the pointed or horse-shoe arch, in the forms of its domes and minarets, and, more than all, in its decoration with the geometrical designs, and the coloring in red, blue, green, and gold, brilliant but raw. It does not show great differences in structure. Sculpture and pictures were omitted. They forbade the use of animals for decoration and substituted the arabesque or interlaced pattern.

Tiles were used lavishly, and stained glass is also a feature of their decoration. It has been called a triumph of the decorator's art.

Figure 33 shows the tombs of the Caliphs at Cairo, Egypt, and is a good illustration of Arabic architecture. Notice the minaret

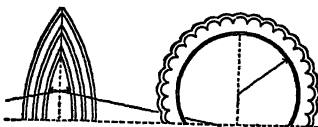


Fig. 34. Lancet Arch. Horse-shoe Arch.

towers at the right, and the raised arabesque work on the outside of the domes. Imagine the interiors covered

with arabesques in brilliant colors. Figure 34 is an outline drawing of both a horseshoe and a lancet arch, while Figure 35 gives us an idea of the arabesque pattern. It is taken from the Hall of Crowns, in the Alhambra. Remember that the arabesques were richly colored.

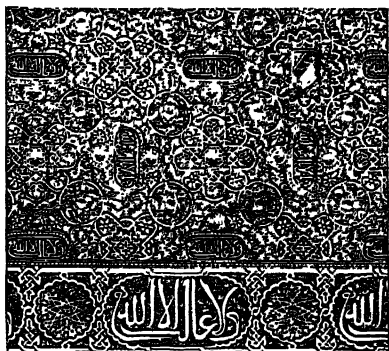


Fig. 35. Moorish Arabesque. From the Hall of Crowns, Alhambra, Spain.

Still another illustration (Fig. 36) contains more arabesque and a pointed horseshoe arch. It is the doorway of the mosque at Tangier, Morocco.



Fig. 36. Doorway of Mosque, Tangier, Morocco.

Two of the elements of beauty in buildings, given in our table, are color and texture. In the buildings of the Saracenic style, the color is so different from the colors used in other styles (except occasionally in the Byzantine), that we should not need to see the whole form and outline in order to know that we were looking at a

building of this style. In the buildings of our day, we seldom see much color, so that the profusion of color in oriental countries is one of the charms and wonders of travel. The sunlight itself seems to brighten and intensify color, and if we have not seen them, we can scarcely imagine the degrees of whiteness and pinkness and greenness of the buildings of the Moorish or Saracenic architecture.

There is a great deal of pleasure in the soft grays or rich browns of the monuments of the art of our northern countries. A gray picture appeals to many people more than a highly colored one. In the monuments of the North with their many projections there is much pleasure to be derived from the mere play of light and shade along the buildings. The architect thinks of this in planning the arrangement of windows and cornices and the depth of doorways. The photographer waits for a time of the day when the sun will throw fascinating shadows upon the sides of buildings. But these variations cannot rival the color effects of Northern Africa where so many Saracenic buildings are to be found. I do not mean that there are no colors in northern buildings, for we often find colored stones and marbles and colored bricks and red and yellow terra-cotta trimmings. But compared to the startling colors of oriental buildings they are like a sober New England gown to a fancy-dress costume.

Another thing we should think of in viewing a building is the texture of the material. Texture ordinarily has to do with the art or process of weaving. We speak of the texture of a piece of cloth as being fine and smooth

like silk or fine linen, or rough like burlap. In the fine arts, texture is also the surface quality of objects. The rough texture of quarried stone is very different from the smooth texture of polished marble. Between the two there is a great variety of difference which we feel in our minds very much as we would with our fingers.

#### THE ALHAMBRA.

Of all their buildings, the Alhambra is universally considered to be the masterpiece of Spanish-Moslem art. It is fortified, as such citadel-palaces had to be protected from enemies great and small. But the fortifications are not strong enough to repel a really warlike invasion.

The Alhambra was begun in 1248, enlarged in 1279, and again in 1306. Its chief glory is its ornamentation. Minute and beautiful patterns containing vines and arabic characters are interwoven into a framework of red, blue, black, and gold of indescribable richness.

The Alhambra was the stronghold of the Moorish Kings. The surrounding wall is more than a mile in extent, and in its prime the fortress would have held fully forty thousand soldiers. The situation is one of great beauty; the snows of the Sierra Nevada mountains forming part of the enchanting panorama. It was the last stronghold of the Moors in Spain, and in it, for two hundred and fifty years, they held out against their surrounding enemies.

The famous beauties of the palace are: The Gate of Justice, The Court of Alberca; The Court of Lions, with its fountain, its alabaster basin shedding diamond



drops; The Hall of Ambassadors; The Tower of Canaries; The Court of Myrtles; The Hall of Justice; and the many gardens, fountains, panoramas, chambers, towers and balconies.

The royal palace, Irving tells us, forms but part of



Fig. 37. The Gate of Justice.

a fortress, the walls of which, studded with towers, stretch irregularly around the whole crest of a hill; and externally it is a rude congregation of towers and battlements, with no regularity of plan nor grace of architecture, and giving little promise of the grace and beauty which reign within.

The illustration (Fig. 32) gives but a faint idea of one of the many famous interiors of the Alhambra. These courts are of moderate size. Much of the decoration is in tiles, much of it in only stamped plaster, but the geometric patterns are rich in brilliant color and the whole effect is one of splendor and luxury.

parties in these strifes, namely, the Guelfs and the Ghibellines.

To travel in Italy, and not to read and hear of Guelf and Ghibelline, would be almost impossible, and it was while these great factions lived and fought in Italy so ferociously that the Romanesque architecture flourished. For, in spite of bloodshed and loss, commerce made great progress. Cities became richer than ever before, and desired to make themselves more splendid than their rival neighbors. The very feudal system, which fostered war, carried with it the monastic system, which gave refuge to the men who loved peace, and the arts of peace, and partly through this system and these men, the noble art of building grew and flourished.

## CHIEF FEATURES OF ROMANESQUE ARCHITECTURE.

Romanesque is used to indicate the style of Christian architecture founded on Roman architecture, which prevailed throughout Western Europe from the early Christian to the rise of the Gothic, except where the Byzantine is found. It grew out of the Basilican architecture, already described, and the two have many features in common; chiefly in that the openings were always arched with round arches. Round arches are a salient feature

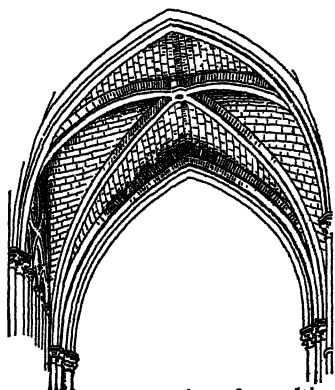


Fig. 40. Example of vaulting from Amiens Cathedral, France.

of Romanesque architecture, and the windows were usually small, owing to the necessity for keeping the walls strong to support the outward pressure of the roof.

The roof was sometimes of timber and sometimes vaulted stone. Vaulting means any solidly built arched roof over a building. Figure 40 shows the appearance of such vaulting. Transepts, or the arms of the cross figure,

were a feature of most Romanesque churches, and we see sculpture taking an important part in the ornamentation. We may get a comparative view of three styles by noticing how the Byzantine differed in certain points from both. The arrangement of the light is similar in the Basilican and in Romanesque churches, but the Byzantine churches depended for light chiefly upon the ring of windows which encircles the base of the central dome, and sometimes of all the domes.

The columns in Basilicas were antique, often taken from other buildings. In Romanesque buildings, a great variety of columns appeared; shafts being freely introduced to decorate doors or arcades to such an extent as to be a great feature of this style. The capitals

differ widely from the classic. In the Byzantine, small columns appear as a decorative feature also. Figure 41 is a Romanesque column from a French church. Note

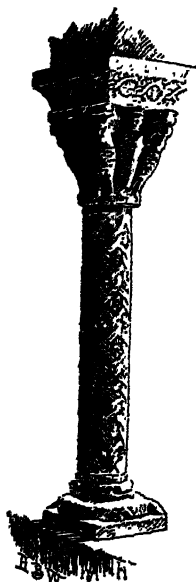


Fig. 41. Romanesque column.  
France.

the various carved figures of the capital, and the braided pattern of the shaft.

The ornaments alone would be a life-time study. In general, the Basilican moldings were few and crude, mosaic being their chief decoration. In both Byzantine and in Romanesque, especially in its later development, moldings became more elaborate, and ornamental carving came to be of more importance, though not so indispensable as in the Gothic that was to follow. The star molding shown in Figure 42 is an example of this. Mosaic is of less importance in Romanesque churches and color decoration partakes more of the character of fresco. The pictorial character of the decoration was wonderfully effective for, though rich and gorgeous, it was always solemn and ecclesiastical.

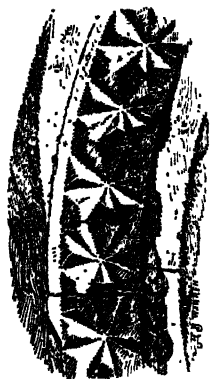


Fig. 42. Star molding, Romanesque, France.

We must also speak of the towers which, in Italy, were built separately, and made such a picturesque feature of these churches. The Bell Towers of Italy are a part of her landscape, and are so well suited to it that they seem to have grown up with the trees. The bell-tower of Giotto is shown on page 151.

The baptistery, which was usually circular, and detached, was also a characteristic feature. In fact the baptistery was sometimes built first and used for a church, as at Florence.

The wheel, or rose window, appeared and became a feature of the Romanesque. See picture on page 140.

Fig. 43. The illustration shows the famous bell tower of St. Mark's, Venice, which collapsed and was rebuilt. At the right of the base of the tower is the Gothic façade of the Doges' Palace (see page 183) and also the library façade.



Remember particularly that the vaulted roofs were supported solely by the walls which had to be of great thickness and solidity, and that the windows and openings were made rather small so as not to weaken the walls. We shall see how a desire to do away with this heaviness caused so many changes as to produce in time an entirely new and distinct style — the Gothic.

Comparing the interiors, the basilica was plain without, gorgeous within, venerable but not forbidding, while the Byzantine was still more gorgeous within, rich and Oriental in color, even splendid, yet more solemn and impressive, suggesting ceremonial and pageantry. The exterior with its domes gave a pleasing sky-line; far more pleasing than the barn-like basilica. The Romanesque interior, though much like the basilica, was richer and more varied, and yet it was heavy compared to Gothic. The Romanesque is often called a picturesque style, largely on account of its towers. This feature was used by the American architect Richardson in many of the libraries and city halls of America.

In Romanesque buildings, the trussed roof is supplanted by great stone vaulted roofs.

## THE CLOISTER.

One outgrowth of the monastic system, and the men who loved the arts of peace, was the cloister. The cloister was an arcade or sheltered and covered passageway or walk, which ran around one or more sides of an interior area or garden. Most of them were attached to churches or monasteries, and many of them were built in the Romanesque era all over Europe,

and in England. The architecture might be Gothic, or Romanesque, or something else. Figure 44 gives a good idea of how a cloister looked. Here, under the arcades, sheltered from the heat of the sun, the monks



Fig. 44. Cloister of a church in Spain.

might sit and work, or walk in contemplation and prayer. The atmosphere of the cloister was peace, beauty and seclusion. Here war might not enter. There are few more beautiful things in the world

than these arcaded gardens. Among the most famous was the one at Arles in France, and another was the one attached to the church of St. John Lateran in Rome. The cut shows general appearance. The ruined abbeys of England and Scotland are justly noted for their cloisters. Often the side wall back of the arcade was painted or frescoed, and the columns richly carved.

#### PISA

The cathedral at Pisa, with its baptistery, Campo-Santo, and Leaning Tower, makes one of the most wonderful and beautiful groups of buildings in the world. They stand apart from the city, and are almost the only cathedral group in Italy that is surrounded by grass and space. All the others have myriads of houses huddled

up against them, but here it is a thing apart, "The other Pisa," Taine calls it, and he goes on to say: "The true Pisa is here, and in these relics of an extinguished life, you find a world. Everything is of marble, rich, mottled, orange marble. On all sides are large solid forms, the cupola, the full wall, the balanced stories. the firmly-planted round or square mass; but over these forms, revived from the antique, like delicate foliage that clothes an old tree-trunk, there is spread individual invention and the new decoration of small columns surmounted by arcades, and the originality and grace of this architecture thus renewed cannot be described."

Having no great architect at home, the Pisans called in Buschetto (Busketus), who was probably an Italian, though some say he was a Greek. He made the body of the church and began the front. He was followed by Rainaldo (Rainaldus), who did nearly all the rest. These two are buried in the front wall of the building that is also their monument. They were followed by Ildebrando, of whom still less is known. These men were familiar with the building of their day; and furthermore, they had studied the mighty work left them by the Romans; and were surrounded by building material of that distant time, on which they drew as from a quarry.

The new church was based on the form of a Roman basilica, but the addition of transepts, like arms, made it a Latin cross. Its central space, the nave or wide aisle, was separated from the narrower aisle on either side by two rows of twelve huge red granite columns that once stood in Greek or Roman temples: these were



taken by the Pisans in war and brought home in their ships. Resting on the great columns are upper walls made in stripes of marble, dark and light, and pierced with windows. These walls form the clerestory, and they carry the beams combined into trusses that cross the nave and support the main lead-coated roof. The roofs of the aisles are supported against the clerestory walls. The nave forms the longest part of a cross, of which the choir, containing the high altar, is the head, and the north and south transepts stretching to right and left form the equal arms. It is customary to set, or



Fig. 45. Cathedral of Pisa, Italy; showing apse at rear.

place, a cathedral so that one who is facing the altar is also facing the east. Over the crossing of the nave and transepts is a dome built much later than most of the church.

The eastern end of the choir is rounded, and this part is called the apsis, or apse. The termination of the choir in a Romanesque church is usually semicircular in plan and vaulted. The illustration is of the interior of the Cathedral of

Pisa. Notice the columns surmounted by round arches supporting the clerestory. The apse with its semi-dome is shown at the rear behind the altar. The pulpit is seen at the right. I am going to ask you to look at the ar-

comes on the front of Pisa through Ruskin's eyes and to note the variations as he noted them. This is what he says:

Not one of the four arcades is of like height with another. The highest is the third counting upwards; and they diminish in nearly arithmetical proportion alternately: in the order 3rd, 1st, 2nd, 4th. The inequalities in the arches are not less remarkable; they at first strike the eye as all equal; but there is a grace about them which equality never obtained: on close observation it is perceived that in the first row of nineteen arches, eighteen are equal, and the central one larger than the rest: in the second arcade, the nine central arches stand over the nine below, having, like them, the ninth central one largest. But on their flanks, where is the slope of the shoulder-like pediment, the arches vanish, and a wedge-shaped frieze takes their place, tapering upwards, in order to allow the columns to be carried to the extremity of the pediment; and here, where the heights of the shafts are so fast shortened, they are set thicker; five shafts or rather four and a capital, above, to four of the arcade below, giving twenty-one intervals instead of nineteen. In the next or third arcade—which, remember, is the highest—eight arches, all equal, are given in the space of the nine below, so that now there is a central shaft instead of a central arch, and the span of the arches is increased in proportion to their increased height. Finally, in the uppermost arcade, which is the lowest of all, the arches, the same in number as those below, are narrower than any of the façade; the whole eight going very nearly above the six below them, while the terminal arches of the lower arcade are surmounted by flanking masses of decorated wall with projecting figures. Now I call *that* Living Architecture. There is a sensation in every inch of it.

The Duomo, or cathedral proper, and the baptistery close to it are surrounded each by a wide white plat-

form with a step; and a broad, green lawn all about them sets off the marble, porphyry, and alabaster. The mellow color of the three softly bright buildings taken together when shining between the blue sky and the green grass makes them seem like fine, old, curiously carved ivory boxes.

Having built for themselves the largest, most ornately beautiful cathedral ever made in the Pisan-Romanesque style, the Pisan people felt that it should have near it the very finest bell-tower that they could build. They were well aware that the Venetians had finished in 1155 a very notable tower, and were bent upon making their own as much more rich and impressive as they could. They knew that their rivals had built with brick mainly; so they made up their minds to have white marble for all the outside.

In Italy it was not usual to join a *campanile*, or bell-tower (called so from *campana*, a bell), to a church, so they looked for a possible site not very far away. They had already taken the best and safest place for their cathedral. For the tower they took what seemed to be the next best, though it had no formal relation to the great building nearby, not being exactly behind, nor even close beside it. Though it was the best they could use, the spot was very swampy indeed, so they began operations by driving a large number of logs, called piles, into the wet ground. Bonanno was chosen to design the new work. For the foundation he made a ring of masonry ten feet deep and as large as he intended the base to be, and in 1174, nineteen years after the Venetians finished their tower, this new one was begun.

The inner walls and stairs were made of stone quarried at the mountain five miles away, that is called La Veruca, or The Wart. For the outer side walls, the columns, and the arches nothing less than fine white marble would do. The outer wall of the first story was made like that of the cathedral, with a blind arcade; that is, a series of three-fourth columns having arches turned from each to each, the whole being engaged, or attached to the wall back of it. These columns divide the wall into fifteen high sections decorated with square panels, of which one is given to the entrance door and fourteen are turned diamond-wise, and ornamented with sculpture and colored marble inlays.

There are two stories as to the progress of the tower. Some say, and the Italian government takes that view, that it was intended from the start to have the tower lean. There were other towers that were made to lean on purpose and there is much to make us suppose that the Pisans wanted to have a leaning tower. The object was to surprise the beholder, and to have it pass for a wonder.

The other story has it that, when the first colonnade was finished, a great difficulty arose. The tower was sinking, and not even sinking evenly. The south side had gone down so much faster and further than the north side that the entire structure was quite far from upright. Bonanno knew that if, as it grew, its center of gravity could be kept within its base-line, the tower would stand. But if, as story was added to story, an undue proportion of weight should overhang on the south side, the whole would fall in ruin. As a first attempt

at correction, they tried to make the third story more nearly upright than the second then was. But the ground continued to yield, and the tower to sink; Bonanno ceased to be the architect; — all were discouraged, and for sixty years nothing more was attempted.

In the year 1234 the chief workman on the cathedral, Benenato by name, undertook to finish the long-neglected tower. He found the difficulties greater than ever for, while the work was stopped, the sinking had been going on. The fourth story was added under his guidance, and from that time onward we hear and know no more of Benenato.

Nearly a hundred years later Pisano undertook to bring the work to such a conclusion as the unforeseen conditions would permit. It was plain that the tower must surely fall if more stories of the same size were added at the same inclination, so he designed a narrower belfry, with wide, open arches in its sides, and a flat roof, reached by a curved and very narrow stone stairway.

It was in part a thirst for greatness that induced the Pisans to build their tower; and though it rose only about half as high as that of their Venetian rivals, their Leaning Tower became a sort of new wonder of the world.

The causes for the strange effect produced were soon forgotten in the general wonder that a tower, seemingly in the act of falling, should continue to stand through the slow-passing centuries. Visitors to the Leaning Tower descend several steps to its handsome entrance, for the base, once even with that of the Duomo, is now seven feet below the general surrounding level. Slowly

climbing the two hundred and ninety-four stairs that lead to the summit, we pass, at the top of each story, a door leading to the external arcade. When we have risen forty feet we can look over the neighboring city wall; the later, longer wall, that was made to protect the city when it had grown far beyond its early bounds, and had treasures to guard.

In the eighth story, which is the belfry, we find seven bells. Opposite to the side, that overhangs its base by thirteen feet and seven inches, is carefully placed the largest and heaviest one.

Suppose that all the bells are ringing while we mount to the flat top of the belfry and lay our hands on the light encircling metal railing: the vibrations from the booming and caroling bells are so repeated by the whole structure that the thin rail under our fingers quivers like a violin string.

Nearby, forming the last of this wonderful group, is the Campo Santo, the garden of the dead. It was planned on the dimensions of Noah's Ark and filled with more than fifty ship-loads of sacred earth from Calvary.

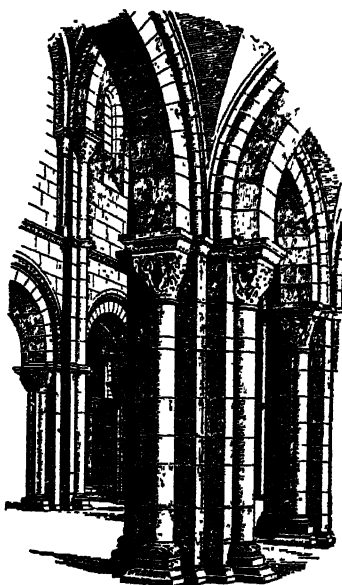


Fig. 46. Round arch construction. A pier, with perspective of nave, aisle and vaulting of the Abbey Church of Vezelay, France.

## STORY AND ANECDOTE.

Twelve altars in the Cathedral are said to have been designed by Michaelangelo. The twenty-four pillars of the central aisle were brought from the island of Siglio and Elba, while those at the sides were evidently collected from ancient buildings. Many of the sixty-eight columns which support the ceiling are of early Greek and Roman origin.



Fig. 47. Example of Romanesque architecture from the Rhine country of Germany. Church of the Apostles, Cologne.

On a mighty pillar is the St. Agnes, and the lamb of Andrea del Sarto; one of the finest specimens of the master's art. The slow swinging of the chandelier suggested to Galileo the idea of a pendulum. Its ton of bronze suspended from the center of the nave is never still, but swings with the same motion from which another great scholar

derived the secret of the attraction of gravitation.

The baptistery, begun in 1152, was not completed for more than two hundred years. An offering, of one soldo

each by thirty-four thousand families, was used toward its completion. The marvelous echo of the interior is one of the best-remembered sounds which many a traveler brings away from Italy. Repeated again and again, the most ordinary sound is taken up and transformed into beautiful music,—one note multiplied into a choir of singers. The pulpit by Niccolò Pisano, carved in 1260, is his masterpiece and was one of the important beginnings of the Renaissance of the art of sculpture.

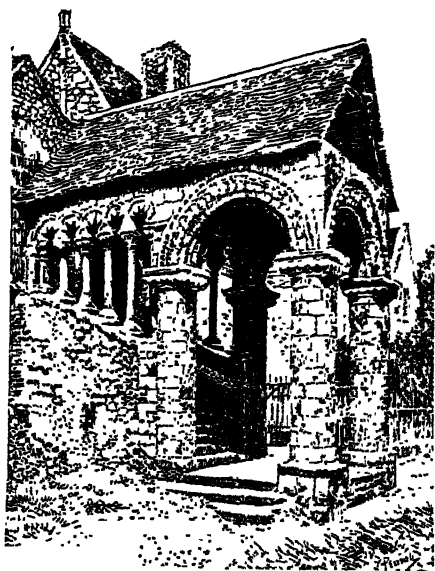


Fig. 48. Norman stairway and porch. Canterbury Cathedral, England.

## OTHER ROMANESQUE MONUMENTS.

There was a Romanesque architecture in France, Germany, and England, highly developed and beautiful, even though none of the buildings came to rank among the few most famous in the world.

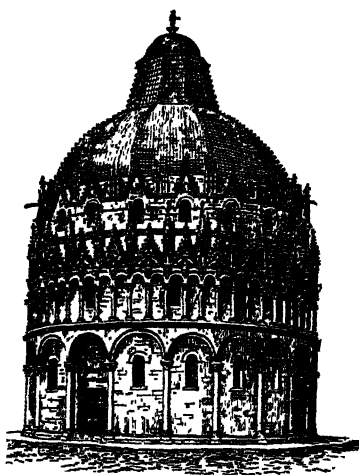
The church at Vézelay in France was one of the finest and most interesting buildings of France. Figure 46 shows a pier with perspective of nave, aisle and vaulting.



Figure 47 shows the Romanesque Church of the Apostles at Cologne, which is one of the best examples of the German Romanesque. This was called Rhenish architecture because many of the churches along the Rhine showed similar traits. Some of them were circular in form.

Durham Cathedral in England is one of the very best examples of Romanesque. Early Romanesque in England was often called Norman.

Figure 48 shows a Norman porch and stairway from Canterbury Cathedral, England. Notice the rounded masonry pillars and the semi-circular arches.



Baptistry of the Duomo, Pisa, Italy.

## THE CASTLE

There is no kind of building that appeals to the imagination more than the castle. It is the building of fairy-story and of romance, for here dwelt the princes and princesses of our early dreams, and here the heroes of the days of chivalry.

By day the tourney, and by night  
The merry dance, traced fast and light,  
The maskers quaint, the pageant bright,  
The revel loud and long.

Here to the harp did minstrels sing:  
There ladies touched a softer string.

Of, if not of revel, we think of war, when "the Bloody Heart was in the field," or of siege, when opposing nobles stormed the gate. "Dungeons deep, those castles held, whose prisoners drew our tears; dungeons where liberty brightest shines," as Byron said in describing the Prisoner of the Castle of Chillon. We call to mind the Prisoners in the Tower,—those two beautiful boys whose eyes were put out with red-hot irons,—and many other strange happenings of those times of kingly cruelty and knightly chivalry.

We think of the castle Sir Walter Scott described in *Marmion*, where:

The warriors on the turrets high,  
Moving athwart the evening sky,  
Seemed forms of giant height;

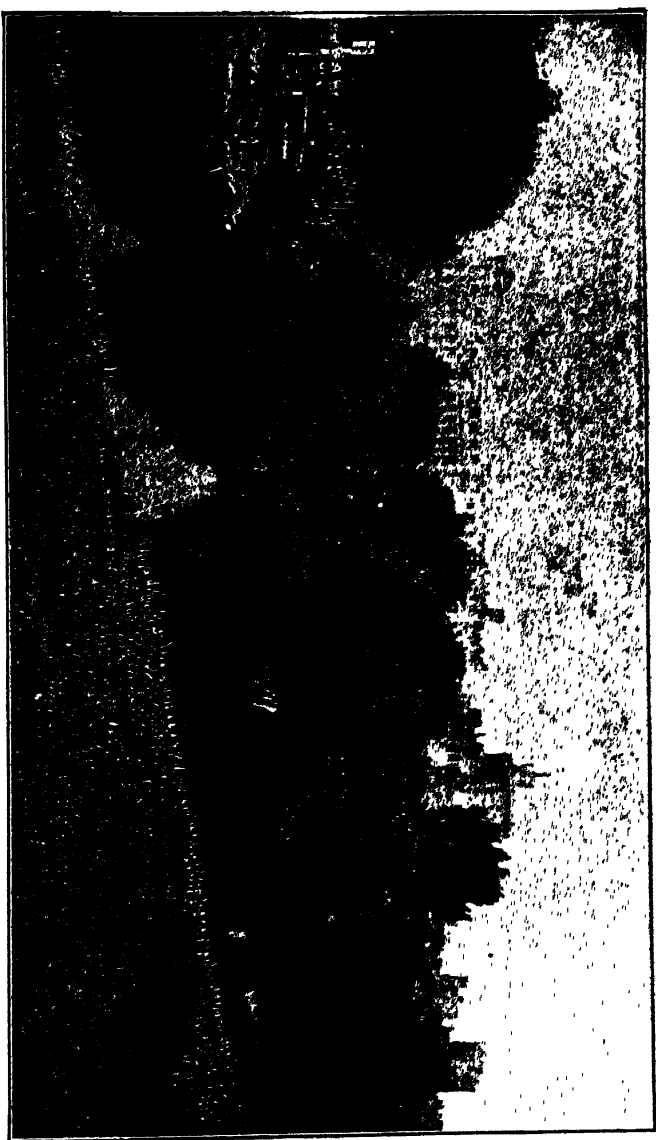


Fig. 49. Windsor Castle.

Their armor, as it caught the rays,  
Flashed back again the western blaze,  
In lines of dazzling light.

To picture to ourselves what lives were lived in those buildings, we must go back to those feudal times when the barons ruled the land. The castle was built for defense, often upon a great rock or high hill, near a river or beside the sounding sea, as where:

The turret held a narrow stair,  
Which, mounted, gave you access where  
A parapet's embattled row  
Did seaward round the castle go.

Above the booming ocean leant  
The far-projecting battlement:  
The billows burst in ceaseless flow  
Upon the precipice below.

We say that "every man's house is his castle," because now we all feel safe in our houses. In those days the whole world was chiefly in the hands of a comparatively few men; and these barons, or lords, were so often at war with one another that great castles were built and fortified. Here the great men held dominion over hundreds, often thousands, of serfs. Sometimes the barons paid allegiance to their king or emperor; sometimes they defied the world. Many of them were robber-barons indeed.

Nearly every city and town was then surrounded by a wall, and commanded by a castle or citadel.

The castles of the early Norman period were sometimes of earth and wood; but in a few instances, as at

Richmond in Yorkshire and the Peak in Derbyshire, the earlier defenses were stone walls inclosing a naturally elevated site. During the long agony of Stephen's reign castles sprang up all over England. The people had good reason to hate them and to dread them, for they all had their torture chambers and dungeons. No fewer than 1117 of these robber castles are said, by Daniel, the chronicler, to have been razed.

Among the very famous castles we can all think of a few. There are the Drachenfels and many other ruined castles along the River Rhine, each with its wonderful tales of early times. There is the great castle of Sant' Angelo upon the Tiber, in Rome near St. Peter's, where Benvenuto Cellini was imprisoned,—the most ancient of all the great castles. There is the much smaller castle of Chillon, upon Lake Geneva in Switzerland, of which and its famous prisoner, Byron has sung so beautifully. And there is the Tower of London, full of thrilling history. But, the greatest of all is the one which we have in the picture, Windsor Castle. It exists to-day as a great royal residence, while many another is unkept or gone to ruin. Windsor is a sort of national institution and represents English history since the Conquest. Its history is, in brief, the history of England. The times of terror and carnage, which caused its great keep to be built, have passed away, and it now stands amid the beauties of the English landscape, itself a part of the picture of grace and security. Its long walk is an avenue of elms three miles long, while its chapel is larger than many of the great cathedrals of England and France.

## CHARACTERISTIC FEATURES OF A CASTLE.

There were certain general features that belonged to all castles, often of great extent and solidity and irregular in plan. The castle was usually surrounded by a deep and broad ditch, or moat, which could be filled with water and which adds so much to its picturesqueness. An outwork called a barbican, which was a strong and lofty wall, with turrets upon it, designed for the defense of the great gates and drawbridge, was placed before it. Within the ditch, towards the main building, was placed the castle wall, about eight or ten feet thick, and from twenty to thirty feet high, with a parapet and embrasures on the top. At proper intervals above the walls square towers were raised two or three stories in height. These were used for the officers, attendants, and servants. On the top of the wall, and on the flat roofs of the towers, the defenders were placed in the event of a siege, and thence discharged their arrows, darts, and stones upon the assailants. The great gate in the wall was flanked with a tower on each side. The gate was closed with massive doors, and also an iron grate, or portcullis, which was lowered from above.

Whatever we may learn about the way the castles were arranged, the walls and towers are the ever-familiar features which we associate with them. Within the exterior wall, there was a large open space wherein a church, or chapel, was usually placed. Within this was another ditch with wall, gate, and towers; inclosing the inner ballium, or court, in which was erected the large tower, or keep. Figure 50 shows the keep or strong-

hold of a French castle. This was a large fabric, with enormously thick walls, pierced by apertures so small as barely to serve as windows to the gloomy apartments within. This great tower was the dwelling of the owner

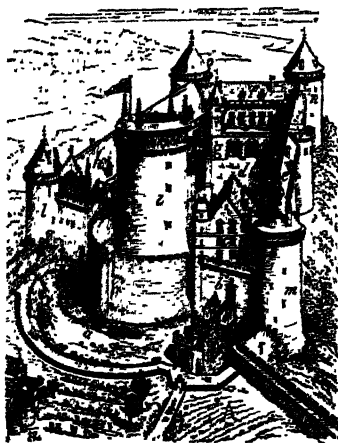


Fig. 50. Castle of Coucy, France. b, the gate; d, inner bailey or courtyard; f, family apartments; h, great hall; i, donjon or keep; l, m, n, o are the chief towers.

of the castle, and in it was also lodged the governor, or constable. It was provided with underground dungeons for the confinement of prisoners, so that the keep was sometimes called the dungeon. In the keep was also the great hall, in which the friends and retainers of the owner were feasted. At one end of the great hall was a low platform called the dais, on which the table for persons of higher rank was placed.

We cannot say that the castle must necessarily be

of any one style of architecture. At Windsor many styles exist, including one of the most beautiful of Gothic chapels. But on account of the dominance of the Norman tower we may roughly call Windsor Norman.

The Norman style arose in England after the Norman conquest, and many churches and other buildings were built in it. The chief features were those of the French Romanesque. The Norman architecture, however, soon developed into English Gothic, and is already Gothic,

even when we see many Romanesque features. Let us not forget the table on page 11. It tells us that strength is one of the principles of Architecture. Certain buildings express their strength. A fortress, or castle, or any building intended for defense, should do this. A stronghold on a mountain-top appears the very embodiment of power.

Mere mass of wall does more perhaps to express this than any one thing. The Greek temple has almost no visible wall, but most of the Romanesque buildings had strong, thick walls. This made it the most natural and suitable style for a fortress or castle.

#### WINDSOR CASTLE.

Windsor Castle stands on a commanding ridge above the Thames, twenty-four miles westward from the Tower of London, and, with its three wards, or courts, forms an oblong area measuring nearly fifteen hundred feet from east to west, and covering more than twelve acres.

William H. Dixon says: "The Castle hill is crowned and mantled by the Norman keep, the royal house, the Chapel of St. George, and the depending gardens, terraces, and slopes. Trees beard the slope and tuft the ridge. Live waters curl and murmur at the base. In front, low-lying meadows curtsy to the royal hill. Outward on the flanks, to east and west, run screens of elm and oak, of beech and poplar; here sinking into clough and dell; there mounting up to smiling sward and wooded knoll. Far in the rear lie forest glades."

On this site, tradition shows, in dreamy indistinct-



ness, poetic visions of the court of Arthur and the early age of chivalry, and history tells us that William I was so pleased with the spot that he built and fortified a hunting-seat upon it, "where he held his court in 1070." He also increased the area of the surrounding forest and arranged the parks. The hunting-seat was afterwards made a palace and Henry I enlarged it in 1110. Of course the present building is new in many parts, but the original dates back nearly 900 years. It had many victims of torture, imprisonment, vengeance, and death, in the early days particularly.

Elizabeth's chief addition was the famous north terrace. Pepys said in 1665: "It is the most romantic castle in the world." We can have little idea of the vast sums spent there for kingly luxury, but we learn that the House of Commons in 1677 granted £70,000 to defray the expenses of a solemn interment for the late king. When Cromwell was in power, he sometimes resided there, and is credited with preserving well the castle and its contents. Charles II first planted the long walk, and during his reign, the great apartments were remodeled under Sir Christopher Wren. Queen Anne did much for the gardens, spending £40,000 upon them.

As it now stands, it is not a medieval castle, but a modern palace, built in castellated and civil varieties of the pointed style. The result is one of the most appropriate majestic and picturesque palaces in the world. It crowns a height with an enormous diadem of battlemented towers, strong with their pale gray stone, but cheerful with their traceried windows, and rising from a garland of fresh oaks and elms that add their grace to its

imperial dignity. Created by the Middle Ages, and with marked features of its origin, it has grown to a stately form that nothing fashioned only by them could have equaled.

Windsor Castle has at least six chief features: the wards, the keep, the chapels, the state apartments, the North Terrace, and the entrance by the long walk. The lower ward, first entered from the town, has a long irregular area. From one end rises a huge circular stone keep, and to the top of the flag-staff it is 203 feet. The number of rooms in the castle is great. Those occupied by the sovereign are numerous and luxuriously furnished and command charming views. The state apartments form a vast and noble suite that shows a great diversity of style. There are dark oak casings and rich carvings by Gibbons, and ceilings painted by Verrio. The valuable pictures are numerous.

One room is called the Van Dyke room, after the works by this master; another Zuccarelli; another Rubens; and so on. Many of the rooms are imposing for their size as well as for their richness. The size of some of the larger rooms is:

Guard Chamber....	78 feet long	31 feet wide	31 feet high
Ball Room.....	90 feet long	34 feet wide	33 feet high
Presence Chamber..	50 feet long	23 feet wide	
Waterloo Gallery...	98 feet long	47 feet wide	45 feet high
St. George's.....	200 feet long	34 feet wide	30 feet high

#### STORY AND ANECDOTE.

Edward III was fond of Windsor, where he was born, and rebuilt most of the castle near the middle of the

fourteenth century, leaving the chief part of the present structure except as it was changed by remodeling in the reign of George IV. The story goes, that, as he was walking with his two captives, the kings of France and Scotland, they remarked on the advantages of the site, and suggested he should build a new palace there. "I will," said Edward with a smile, "and you gentlemen shall pay for it."

William of Wykeham, the famous architect, and several hundred workmen, were employed by Edward IV. The most beautiful and sumptuous part then built was the collegiate chapel of St. George.

Here the great round table, in imitation of Arthur's, was revived in the fourteenth century, and here also, the famous Order of the Garter was established in 1348. During this century the court had the reputation of being the gayest in Europe. Pageantry and splendor abounded. One chronicle of the time says:

that in the threshold  
Come every day —  
Ten thousand folk, by his messes told  
And in the kitchen three hundred servytours.

Other sovereigns successively made additions or alterations, and resided in the castle. It was strengthened by Charles I, but was seized by Parliament, and held through the Civil War. In 1648, Prince Rupert made an ineffectual attack upon it; one of the few warlike events of which it has been the scene.

Windsor has had its famous prisoners:

In 1347, David Bruce, King of Scotland, who had

## GOTHIC ARCHITECTURE

The period of the cathedral-builders was one of the most wonderful periods of history. Between 1000 and 1500 we see these noble buildings rising all over Europe; in Germany, in France, in Italy, and in England. We notice, too, that in different centuries the same general style prevails throughout the different countries at the same time.

In the twelfth century, when the Italian buildings, such as the churches at Verona, Como, etc., were built with round arches, the German churches at Bonn, Mayence, Freiberg, etc., the French churches at Aix, Caen, Dijon, etc., and the English cathedrals at Canterbury, Bristol, Chichester,—in fact all those built at the same time, were not only round-arched but had an almost identical style.

In the thirteenth century, when pointed arches were predominant in the architecture of France, they began to penetrate all other countries.

In the fourteenth century, when Cologne and Strasburg cathedrals were built in Gothic; those at Westminster, York, and Salisbury arose in England; the Domes of Milan, Assisi, and Florence in Italy; and the churches of Beauvais and Rouen in France. These all came almost simultaneously, although France seems to have been the leader.

How did this happen? How did it come about that, at almost the same time, in counties so far apart, with such varying climates, and with people so very different, the same style of building would prevail at the same time?

In those days every craft had its guild. Tradesmen and artisans of all kinds were banded into these associations, and it was an honor to be admitted to a craftsman's guild whether of masons or painters or sculptors. It required an apprenticeship, and so strict were the rules that those who worked upon the churches were expected to lead honorable lives. Such guilds meant that every man was skilled, nearly perfect in fact, in whatever he did, and so powerful were the guilds that they controlled the style of building.

The piety and devotion of the craftsmen was very great. What Longfellow wrote of one, we may safely think of nearly all the great army of devoted laborers of these ages.

The architect

Built his great heart into these sculptured stones,  
And with him toiled his children, and their lives  
Were builded with his own into the walls  
As offerings to God.

(*Longfellow, "Golden Legend, As to  
Strasburg Cathedral."*)

"The churches of the Middle Ages," writes Okey, "were no more than an exquisite expression of what men were surrounded with in their daily lives and avocations. The houses and oratories of noble and burgess were rich with carved ivories, with sculptures and paintings, tapestry and enamels: the very utensils of common

domestic use were beautiful. Men did not prate of art: they wrought in love and simplicity. If painting was an art, even so was carpentry. A mason was an artist, so was a shoemaker."

"Great buildings, like great mountains, are the work of centuries," says Victor Hugo. "Often the fashions in art change while they are being constructed and they are continued according to the new art . . . Time is the architect; the nation is the mason."

Drawing a comparison between Classic and Gothic, Ruskin sums up the two opposite principles in two words, "horizontal and vertical." The visitor who views a Gothic cathedral will move his head up and down, he says, but in viewing a classic temple he will move it from side to side. The reason for this has been explained in many different ways. Some have said that climate has caused the difference, because the snow of the North requires a high-pitched roof, while in the hot South a perfectly flat roof with a projecting cornice is used to keep off the sun.

Others have attributed it to religion, saying that the pagan Greek was earthbound, sensuous, and formal, while the Gothic builder was aspiring and spiritual, his spires and steeples pointing like fingers towards Heaven. Others see the cause only in the materials the builders had at hand. There were great beauties in both. In the classic styles are found repose, simplicity, harmony, and perfect proportion. In the Gothic, variety, elegance, and life.

Wordsworth thus voices his idea of the meaning of some of the forms of architecture:

Diffused in every part

Spirit divine through forms of human art;  
Faith had her arch — her arch where winds blew loud,  
Into the consciousness of safety thrilled;  
And love her towers of dread foundation, laid  
Under the grave of things; Hope had her spire  
Star-high and pointing still to something higher.

This Gothic architecture followed and was developed from the Romanesque by attempts to solve certain structural problems in the vaulting of the basilican and Romanesque churches.

Some one has said of the buttressed Gothic, that the architects could not make their churches stand up without crutches, but we shall learn that buttresses were there for an artistic and useful purpose as well and helped to make the style possible.

Gothic first received its name as one of contempt. The Goths were a barbarian and vulgar race of the North of Europe, who conquered the Romans, and the Gothic style was at first so called to denote the poor opinion the Italian people had of it. But it was not a vulgar style by any means, for the people of the North had become civilized and their Gothic architecture was as refined and elegant as any the world has produced.

#### CHARACTERISTICS OF GOTHIC ARCHITECTURE.

If we look at a Greek temple, and then at a Gothic church, we see that they are not at all alike. Yet the Romans imitated the Greeks in many things, and Romanesque grew out of Roman; and, later on, the Gothic grew out of the Romanesque. As each style was being

transformed into the next there would be a period of time, sometimes a long period of time, when the features of the new style were only beginning to show themselves. During this period there would appear in the buildings a mixture of both styles. This period was usually called a transition period.

There is no style of architecture more distinct than the Gothic, and yet it came into being gradually out of previous styles. Gothic, like Greek, has been called the most intellectual of styles, because every change came about for some reason related to the building of the structures.

One of the chief visible features of Gothic is the pointed arch, and this developed from the rounded arch because the builders found it the only solution of the difficulties into which the rounded arch led them.

One of the chief difficulties with the rounded arch was to make the top of the arch reach any desired height or level with different widths between the supporting pillars. Where pillars were joined together by vaulting, the pointed arch could be made to conform to any level, no matter how narrow the span or distance between the pillars, but the height of the rounded arch was necessarily fixed by the width of the span. If you examine the two styles of arch, I think you can see how this would be, but I do not think you need to know all about these constructive difficulties, nor about the many complexities of a great Gothic church, in order to form an idea of the way in which such a structure as that shown in Figure 51 was put together.

We remember that the heavy stone roof of a building



exerts a thrust or pressure outwards on the walls and that in Romanesque buildings, the walls had to be enormously thickened in order to withstand this outward

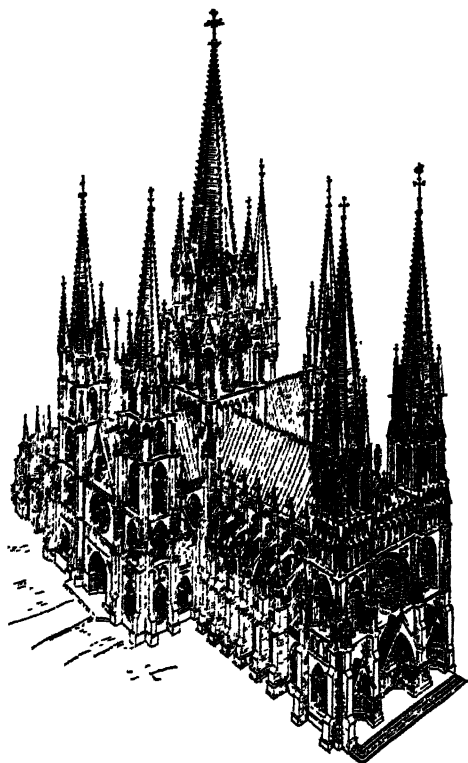


Fig. 52. Typical scheme of a fully developed French Gothic cathedral of the thirteenth century.

pressure, and, finally, that only very small openings could be allowed for windows. But in the Gothic, the whole scheme of the building is made to rest in a framework made up of piers, arches, and buttresses, in which the thrust in one part is balanced by the counter thrust in another part, so that the opposing pressures work against each other, all the parts being as light as possible.

The strength of these buildings

was in this skeleton framework rather than in the walls. In fact, walls were not needed to support the roofs and this gave the opportunity for the windows which are so

large, and so important, a part of the beauty of these Gothic cathedrals.

Figure 52 gives a fully developed French Gothic cathedral in which we can get a view of the structure as a whole, while Figure 53 shows how thrusts balance each other. The section at the right of the picture is taken at the level of the head of the flying buttress, and the arrows indicate the direction of the thrusts. The balancing of these thrusts of course tends to hold the structure firmly in place. Can you not apply this to Figure 52, and imagine these opposite forces at work?

One of the distinguishing features of the appearance of the Gothic churches was the buttress, and the flying-buttress, which were essential parts of the framework we have mentioned. The flying-buttress was an arched buttress which extended outside of the walls and carried the weight, or outward pressure, to another main buttress standing outside of the buildings, sometimes at some little distance.

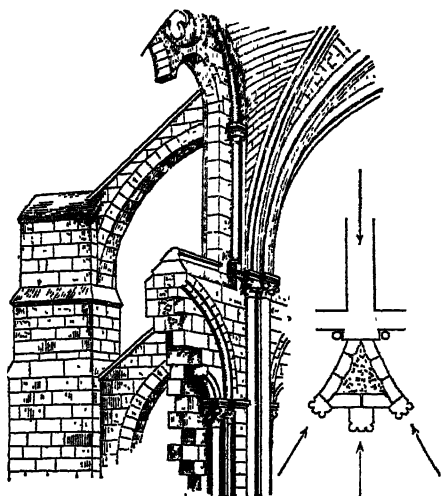


Fig. 53. Cut showing thrust in Gothic architecture. The section in the plan at the right is taken at the level of the head of the flying buttress. The arrows show the direction of the thrusts.

Figure 54 shows buttresses in some detail. The parts marked a.a. are buttresses and the parts marked b.b. are flying buttresses. Note the pinnacles which were used to give additional weight and stability to buttresses. Everything, no matter how purely ornamental it may look, had a definite use in Gothic architecture.

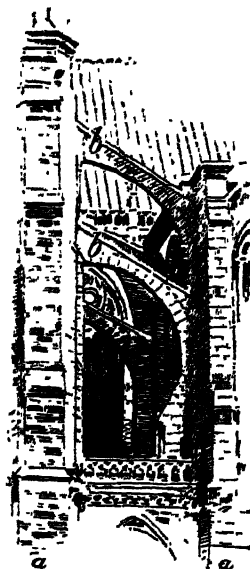


Fig. 54. Buttresses at Abbey of St. Denis, France.

a, a, buttresses; b, b, flying buttresses.

Another necessary part of the Gothic structure was the ribbed vaulting. Vaulting, as we have seen, being a solidly-built arched roof, it came about in Gothic work that ribs or molded arches formed the net work and strength of the vault, the rest being filled in with lighter stone-work supported by the ribs.

Still another feature of the Gothic style was the tracery, or stone frames of the great windows. Tracery may be seen in Figure 55. This is not window tracery, but is a fine example of carved tracery from Gloucester cathedral in England. Notice how it spreads over the surface of the vault like the folds of a fan. In the early stages of Gothic, tracery was much simpler than in the later ones. Every great style develops in this way, and as it declines in vigor, the decorative features become much more pronounced. Figure 56 shows the tracery of the later Gothic, as found

in Rouen cathedral, one of the most beautiful in France. Notice the wavy, flamelike form of the design. Flamboyant was the epithet applied to this style in Europe, and it corresponded to the so-called perpendicular in England. Other features of the Gothic edifices were the rich carving and the highly wrought moldings.

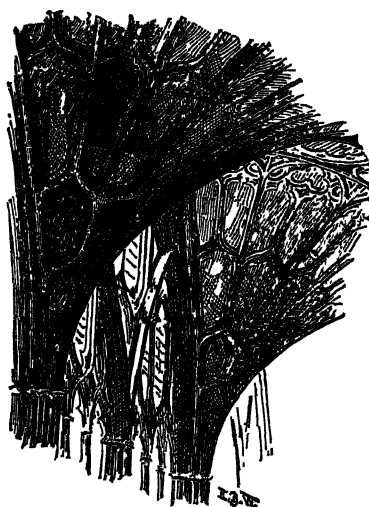


Fig. 55. Fan-tracery, in the cloisters of Gloucester Cathedral, England.

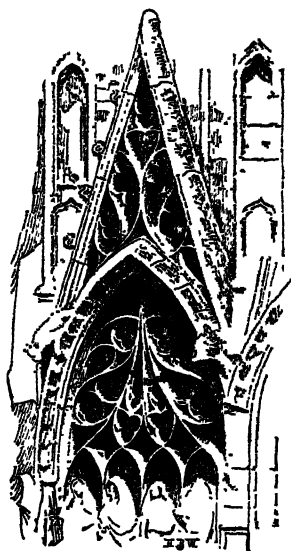


Fig. 56. Flamboyant Tracery, Rouen Cathedral, France.

The churches of this style were mostly in the form of a cross with towers or tapering spires.

The plan of a Gothic cathedral consists of a central nave, the eastern portion of which forms the choir, with sometimes one and sometimes two side aisles on each side, and with a transept, also usually provided with

aisles. The choir terminates eastward in an apse, around which the aisles are continued and, opening out of these aspidal aisles is usually a series of small chapels. The

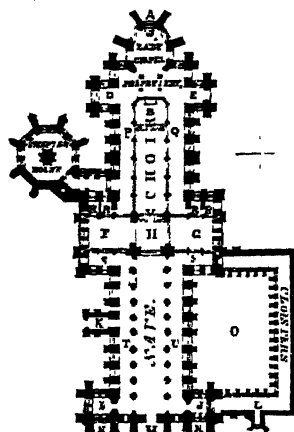


Fig. 57. Plan of Wells Cathedral, England.

A, apse or apsis; B, altar, altar platform, and altar steps; D, E, eastern or lesser transept; H, central tower; I, J, western towers; K, north porch; M, principal or western doorway; N, N, western side doors; O, cloister yard; S, S, east and west aisles of transept; T, U, north and south aisles of nave; R, R, chapels; V, road screen and organ loft; W, altar of lady chapel.

nave is divided from the aisles by a row of piers on each side which support the super-structure, consisting of the triforium and clerestory, and on the outer sides of the aisles are half piers, against which are set the great buttresses of the exterior. Figure 57 is the ground plan of Wells Cathedral in England and the plan is lettered and explained in a way that will clear up any doubts you may feel as to the exact location of the parts. Figure 58 shows the north portal or door of the Virgin of the western front of Notre Dame of Paris.

Much attention was given to the design and ornamentation of doorways during the Middle Ages. In all good architecture the chief doorway of a building is treated as a very important feature.

In Romanesque churches the doorway is no deeper than the thickness of the wall, but many Gothic doorways are built out from the edifices, and are surmounted by richly carved pediments. Many Gothic ca-

thedrals had cloisters attached.

A lesser feature of Gothic decoration was the carved gargoyle, used to carry off the water from the roofs and buttresses. The gargoyles of Notre Dame in Paris are famous in song and story. Sculpture again was most important. The architect or master-builder was always a good sculptor and so were many of his workmen. We find whole doorways covered with carvings and sculptures, each

one of which had its special meaning, and the stories which the carvings told were taught to the children and to the people, and were like a bible of stone to many who could not read plain printed letters. Many of the carved

forms were symbols and were often repeated.

Many of the sculptures were imitated from the flowers and leaves that grew around the church. Nearly all the most beautiful lines that are used in carving are adapted from these lines that

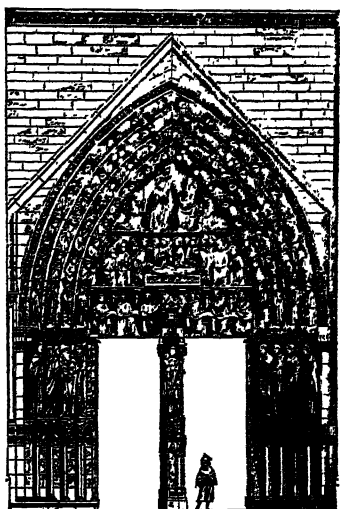


Fig. 58. North Portal, or Door of the Virgin, of the western front of Notre Dame Cathedral, Paris.

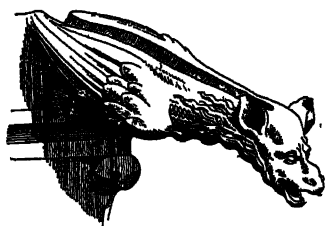


Fig. 59. Illustration of a Gargoyle. Thirteenth century. France.

are common in nature, and the Greek borrowed the acanthus leaf and applied it to his capital, so the best ornaments of the Gothic period are imitated from flowers and plants. It is carried even further than this, for is not the column itself like the trunk of a tree, and is not the pointed arch like the trees of the forest joined over our heads, or like the end of every leaf that shakes in the summer breeze? Many have compared the great Gothic cathedral to the dim interior of a forest, and although accidental, the similarity is interesting.

Pord Houghton describing a forest, says

Bases far-spread and branches serpentine,  
Sylvan cathedrals, such as in old time  
Gave the first life to Gothic art.

And Adelaide Proctor describing the interior of a church:

Then gazing up through the dim pillars high,  
The foliated marble forest where ye lie  
"Hush," ye will say, "it is eternity."

And again:

The walls of the Cathedral rise  
Like a mysterious grove of stone.

#### PAINTED GLASS.

Painted glass was a great factor in Gothic architecture, so important a factor indeed, that there would be more meaning in the name if it were called the painted-glass style instead of the pointed-arch style.

Heavy walls were not necessary to the Gothic church, and especially in France and the northern countries where plenty of soft, colored light was often a relief from a cold gray outside, the use of stained-glass windows became a very distinctive part of the plan and decoration. The fullest magnificence of these beautiful windows came in the twelfth and thirteenth centuries; but the art was practised before that, and it has been practised ever since.

Look at the picture of the wheel-window and notice, first, the pattern. This is all of carved-stone work, called

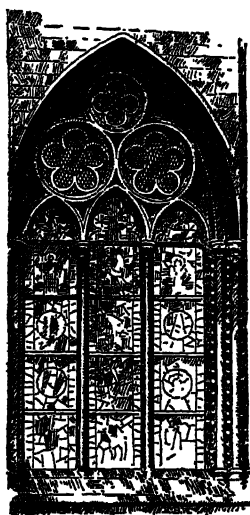


Fig. 60. Triple Gothic window from Lincoln Cathedral, England.

tracery, and was needed to hold the glass in place and to protect it from storm and wind. The glass was colored, while molten, and then cut up, and afterwards joined together by bars of lead or iron. The glass was often drawn upon by a pencil charged with a color that was afterwards burnt in and made permanent.

The artist of that day wisely kept largely to the idea of following a pattern, and of making brilliant harmonies in rich colors rather than of composing a painting. The outside light passing through the window illumined the interior with the richest imaginable effects, and the windows themselves were glorious and full of splendor. Figure 60 presents a typical Gothic



window of the thirteenth century, from Lincoln cathedral, England.

We have tried, in the preceding pages, to give some idea of the structure that is called Gothic. Its structure was its life and essence and, if you have an idea how the building was put together, you have got the most important thing about it. Let us remember that many buildings that are called Gothic are not Gothic in their structure, and therefore not really Gothic. The mere application of Gothic "features" does not make a building a true Gothic structure. Many of the town halls and palaces which did not have the structure, came to be decorated with the features of Gothic decoration and we hear of them as Gothic. Throughout Europe, when Gothic became the fashion, windows, traceries, carvings, and moldings of the Gothic style were freely used on the façades of public and private buildings. When we travel abroad these rich and beautiful structures greet us in all the old towns.

#### NOTRE DAME OF PARIS.

Notre Dame is an edifice in the early French Gothic style; one of the first great exemplars of that style to be erected in France, and the model on which many others were afterwards based. It stands at present somewhat lower than it once did, owing to the gradual rise of the surrounding ground; formerly it was approached by a flight of thirteen steps,—the usual number, from the Temple at Jerusalem.

It is a royal church and therefore contains memorials of the people of state. The remains of an altar of Jupi-

ter, discovered in 1711, indicate that a Pagan temple once occupied this site where, in 375, a church, dedicated to S. Stephen, was built under Prudentius, Eighth Bishop of Paris. In 528 a far more beautiful edifice was built by its side, which was to become the cathedral of Paris, and it was endowed with three estates. It had not been finished long when it was besieged by the Normans and successfully defended.

The first stone of a new and much larger cathedral was laid by Pope Alexander III, in 1163. The work advanced rapidly. The choir was finished in 1185, and a year later Geoffrey Plantagenet, son of Henry II of England, was buried in front of the high altar.

The south porch was begun by Jean de Chelles in 1257; the north portal about the same time; and the cathedral was finished by the beginning of the reign of S. Louis. Year by year saw destructive changes until the Revolution broke out, when the greater part of the statues of the portals and choir chapels were destroyed, and the cathedral became a Temple of Reason, Mlle. Maillard, attended by her priestesses being adored as Goddess of Reason. Serious injuries to the beauty of the old cathedral were perpetrated under the name of restorations at various times, but since 1845 most of the injuries have been repaired during a magnificent restoration of the entire fabric under Viollet-le-Duc. Even the building narrowly escaped destruction during a period of great public excitement in France and in Paris, when all the chairs were piled up in the choir and set on fire, and only the lack of air and the dampness of the walls saved the building.

The design not only shows great size and grandeur, but a general simplicity, that gives increased effect to portions that are boldly, even richly decorated. The stone is uniformly soft, pale buff upon fresh surfaces, and worked with ease, but hard and grayish after long exposure.

Another feature is prominent on the exterior of the sides and apse. There, flying buttresses, immense half arches, crested by steep ridgy slopes, spring from huge yet elegant supports of masonry, along the outer circuit of the walls, and sweep far upwards to the base of the roof upon the nave. Tall pinnacles give needed weight and greater beauty at each important point along the choir. These giant arms are very picturesque, but are

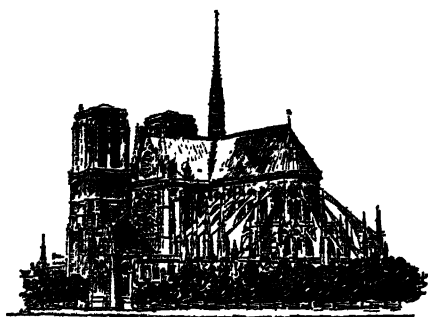


Fig. 61. View of Notre Dame Cathedral, Paris, from the southeast showing the great flying buttresses and the rood-steeple.

not made for mere effect. They are, as we have seen, vital parts of the construction, and the power and truth of Gothic art have fashioned them with grace and grandeur. Figure 61 gives a view of Notre Dame showing these prominent

buttresses around the apse. Notice the steeple built up over the crossing. This is called the rood steeple. The roof is of ponderous vaulting, withstood by the mighty buttresses. Over the vaulting is the real roof — much

steeper as required by the northern storms and masses of snow that would accumulate on a more level roof.

The windows are far larger and more numerous than in the South. Why? All the sunlight was needed in winter, and it could not be oppressive in summer. Thus we see how climate affected the style of architecture that would grow up in a country. In the hot South the cool, dark churches are a relief from the tropical heat, but here more light was needed to offset the many short and cloudy days.

If we look at the picture and examine the front of the church we shall see that it is almost exactly symmetrical. It is one of the very finest façades in the world. Notice the three great portals and the rich carving all around them. Sculpture within and without was one of the characteristic embellishments of Gothic churches. If you look closely you may see small projections; these are the gargoyles of Notre Dame. An illustration of one of them is given on page 133. The use of these is the carrying off of the rain water, but their grotesque carving has made them famous. Over the portals notice the row of statues forming a sort of band across the entire front.

The great wheel-window, or rose-window, over the central door, contains the original glass, and, as one enters the building, its rich coloring is an object to delight the eye. There are two other great wheel-windows in either transept, and one of them we can easily see in the picture. Figure 62 is an excellent cut of a wheel or rose window.

A great work of Architecture is an Expression. In

the arts the worker expresses himself and often, either intentionally or otherwise, a great artist will express in his work a great thought, a high ideal, or even a national one. We may think of Notre Dame and of the

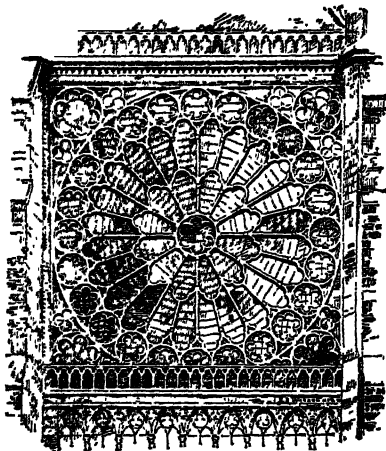


Fig. 62. Rose window from the Abbey Church of St. Denis, France.

Gothic cathedrals of these times as great expressions of the growing freedom of the world, freedom of thought, and freedom from oppression. The Gothic cathedral expressed religious feeling and aspiration, and there is hardly any one so dead of soul as not to be thrilled when he enters one of these great churches.

I wish we could just now be traveling in France back in those early ages. We should visit a medieval town, for great churches were often built in small towns. These were times when cities were surrounded by great walls and ditches for protection against invading enemies. If we approached such a town in the early morning, we should probably see many of the skilled workmen, who lived outside, going to their work, and the bulk of the great cathedral would be seen to rise against the sky, higher than all the other buildings. It was the pride and joy of each city to outdo its neighbors in these monuments for the public instruction and benefit.

But, besides all this, the building is an expression of itself, and of the necessities of its structure. I hope our examination of the structure of a Gothic church has taught us that, whenever we look at one, we should remember how its countless beautiful forms grew out of real necessities about building or constructing it; grew out of real problems which the builder had to solve. Only after many years of development it came out the complete, logical whole that we may go and see to-day.

There is no architecture more truly expressive in every sense than the Gothic.

The interior of Notre Dame at once gives a profound impression. Genius has wisely formed it for the uses to which it was dedicated. Everywhere are truth, solemnity, and strength, that win one

to a devotional or meditative mood, and one must indeed be stirred by the music that resounds in tones of triumph or of praise through these old arches. The high altar looks through the unbroken spaces of the nave. The



Fig. 63. Perspective of vaulting as applied in a double curved apsidal aisle, Notre Dame, Paris.

pulpit is placed where crowded audiences can assemble all around it, and hear what the preacher says. The upper parts, filled with traceries and glass, form magnificent and brilliant walls. Figure 63 shows a perspective view of the vaulting as applied in the curved aisle that extends along the apse.

Although ninety years were consumed in the building, the design was carried out as though it were the thought and plan of but one man. It, therefore, has unity, as it is called, or a certain oneness of style—such a combination of parts as to produce a whole. A thought of what it would mean to produce such a fabric to-day may give us an idea of the power that could accomplish it then, with a much smaller population and far less wealth.

The Gothic church was thought out by many minds until it developed into an almost perfect type.

I see thy beauty gradually unfold,  
Daily and hourly more and more.  
Gazing I seem to see  
Thought folded over thought.

#### STORY AND ANECDOTE.

It must not be forgotten that, during the Middle Ages, the church was used much more than now. It was a meeting-place for all: business was transacted there, and it was in a true sense the school of the time. The people, not being able to read, were taught by means of the sermons, the stage plays written to teach morality, and by the sculptures and pictures on all sides, telling the lives of the saints and the stories of the gospels. It was also a sort of museum, precious and curious relics being

of buttress, flying-buttress, and pinnacle, produce in some a feeling of unrest which displeases them. The churches seem to give one a sense of movement, the feeling that stone is always grinding against stone.

“English cathedrals are quieter; more soothing, less daring; more peaceful,” says Simpson.

Norman Architecture was not Gothic, but Romanesque. But the Gothic grew out of it.

Norman windows are in general long, and rather narrow, round-headed openings, but sometimes of two lights divided by a shaft included under one arch. There were also circular windows. Rich doorways form one of the most important features of Norman work. They are generally round-headed and very deeply recessed. The tympanum is frequently filled with rich sculpture and moldings are numerous. Zigzag molding is characteristic. The pointed arch occurs as early as 1150.

Arches pointed and round appear to have been used indiscriminately for a long time; but arch alone will not determine style—the moldings and general character of the edifice are the best guides. The Norman buttress was plain and flat, and small arcades were frequently used. The piers were plain, square or round, and solid, but often with capitals. The capitals, themselves, were plain, a sort of rude cushion-shape, but later scalloped. The bases, too, were very simple. Moldings were extremely abundant, particularly in doorways.

#### PERIODS OF ENGLISH GOTHIC.

We may give the periods of English medieval architecture approximately as follows:



Early Norman in England.....	1060-1090
Norman Period .....	1090-1160
Transition .....	1160-1195
Early English .....	1189-1272
Transition .....	1272-1300
Decorated .....	1300-1377
Transition .....	1360-1399
Perpendicular .....	1377-1547
Debased Gothic. Elizabeth to the seventeenth century	

In the transition period to Gothic called Early English, we see the moldings becoming elaborated, the arch pointed, and the flying-buttress introduced and becoming a prominent feature. The tower becomes more lofty and the spire is often a fine feature. Salisbury is *the type* of Early English.

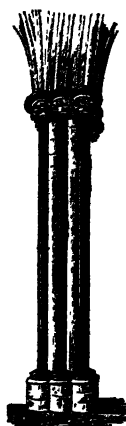


Fig. 65. Example of clustered columns.

With the incoming of the Decorated, we find sculptures of the human figure. Such features as this often tell the experienced the year of the work. The doorways are often large and richly sculptured and have a rich canopy over them. The Decorated style is distinguished by its large windows, divided by mullions and tracery, which was flowing and flamboyant. Circular windows are also a fine feature together with clustered columns, pinnacles, false-timbered roofs, and fine spires. York nave is the finest example.

The Perpendicular is never seen except in England. Its feature is the form of tracery at the heads of windows — no longer flowing, but divided by perpendicular mullions, especially used in palaces and houses at first. “Per-

pendicular " buildings often contain splendid open-timber roofs.

The Houses of Parliament in London are a good example of this style, imitated in more recent times.

We may summarize the division of styles by centuries as follows:

Eleventh century .....	Anglo-Saxon
Twelfth century .....	Norman
Thirteenth century .....	Early English
Fourteenth century .....	Decorated
Fifteenth century .....	Perpendicular
Sixteenth century .....	Renaissance

The chief examples of English Gothic may be set down as follows:

Norman	1066 1200	Massive walls, flat buttresses, round arch, small windows, large moldings, short towers, chevron or zigzag ornament.	Durham or Peterborough Cathedral; Keep of London Tower.
Early English	1200 1306	Slighter walls, projecting buttresses, lancet windows, pointed arches, small deep moldings, slender shafts, stiff foliage in capitals, spires, sag tooth ornaments.	Salisbury or Lincoln Cathedral; King's Hall, Winchester, Westminster Abbey.
Decorated	1300 1400	Much larger windows, full of tracery, larger	York Minster; Litchfield

and fewer shafts,  
fewer and shallower  
moldings, more or-  
nament generally,  
arches less pointed,  
ball-flower ornament.

Cathedral;  
Warwick  
Castle.

Perpendicular  
called Lancastrian  
and Tudor 1400  
1550

Thinner walls, enor-  
mous windows.  
Stone vaulted roofs  
of low pitch, de-  
pressed arches, pan-  
eling in windows,  
divisions in perpen-  
dicular lines, fine  
towers. Tudor flow-  
er — coat of arms.

Canterbury  
(nave and  
tower);  
Gloucester;  
King's Col-  
lege Chap-  
pel, Cow-  
dray.

Followed by Eliza-  
bethan - Jacobean  
— mostly in cas-  
tles and palaces —  
and then by Ren-  
aissance.

Figure 66 gives an idea of some of the typical moldings of the Gothic styles. The Tudor style of Gothic is much imitated in modern times and an example is furnished in Figure 67. It flourished about 1485 to 1603.

#### WESTMINSTER ABBEY.

Unlike most of the famous churches, Westminster Abbey is not a cathedral. A cathedral is the principal church of a diocese, which is specially the church of the bishop, and so-called from the fact that it contains the Episcopal throne or chair of the Bishop, known as the "Cathedra." But Westminster ranks as a cathedral, by its magnitude and by its great importance in the art and history of England.

Its early history is hidden in an obscurity we cannot penetrate. Legend says the Romans had a temple on the site. The present Abbey was founded by King Edward, the Confessor, and was dedicated to St. Peter. It was fifteen years in building, and was consecrated on Innocents Day, Dec. 28, 1066. The church was built in the Norman style, and was regarded as a structure of matchless size and beauty. But of this goodly edifice hardly anything remains except a few fragments of the superstructure.

The Abbey is 511 feet long, the transepts 203 feet across. Of the now existing church, the oldest parts are the chapel and transepts built by Henry III (1216-1272). They are in Early English, or first pointed style. The lower part of the western towers and the façade were fairly repaired by Sir Christopher Wren from 1713 to 1723.

The style of the church is Early English, of the later period in its most graceful and magnificent development, its unity of design second only to Salisbury. The whole can be understood only after repeated visits. The exterior is impressive from its length and height, the boldness of the buttress, and its grand simplicity, except at the east end where the elaboration is very remarkable.

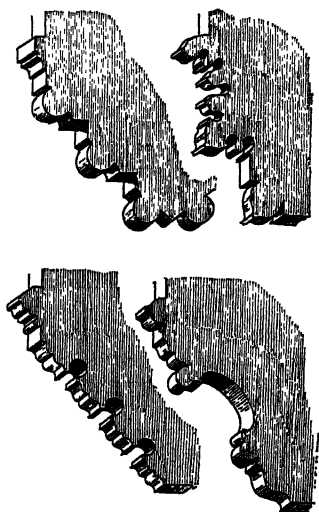


Fig. 66. Gothic moldings in sections.



Fig. 67. Tudor architecture.

Gray is the prevailing color, bleached to whiteness or shaded to grim black.

#### STORY AND ANECDOTE.

Westminster Abbey was once, for ten years, a cathedral, and was then called "St. Peter's." When the bishop and estates were transferred to St. Paul's, the by-word arose of "robbing Peter

to pay Paul." Though it no longer has a bishop it is often regarded as a cathedral on account of its dignity and imposing size. Here the imperial island keeps its mighty dead. More than twenty-five Kings and Queens are buried in the Abbey, including Mary Queen of Scots, and Elizabeth; such statesmen as Pitt, Fox, Canning, Wilberforce, and Gladstone; such writers as Chaucer, Spencer, Ben Jonson, Dryden, Dickens, and Grote; and such other great men as Sir Isaac Newton and David Garrick.

Even though a purer type of English Gothic may exist than Westminster Abbey, no other building in the world has as much general and historical interest for every reader.

#### GIOTTO'S TOWER.

In a future chapter, on Renaissance Architecture, we speak of the great dome of the Cathedral of Florence.

The dome only was Renaissance; the Cathedral itself was Gothic, though it hardly looks like Gothic after one has seen Notre Dame. In fact it is not true Gothic. The Italians built only a few true Gothic churches like that at Milan. They did not adopt the flying buttress and pinnacle, the large pointed windows and the other prominent Gothic features such as we see in France, Germany, and England. They did not care much for Gothic. Milan is an exception. Rome with its 365 churches of note, one for every day of the year, has only one good Gothic church.

The Florence Cathedral was as near as the Florentines of that day cared to come to true Gothic. Arnolfo del Cambio, its architect, was one of the greatest builders of the Middle Ages. The bell-tower, as we read in connection with Pisa, was in Italy a separate building. That at Florence was no exception. It was designed and mostly built by Giotto and was known as Giotto's tower. He and his tower are two of the most famous things in all the world.

Figure 68 gives but a faint idea of the tower, but will show us its shape, and the arrangement and style of its windows, and the symmetry and beauty of its composition. Mrs. Oliphant writes of the Campanile:

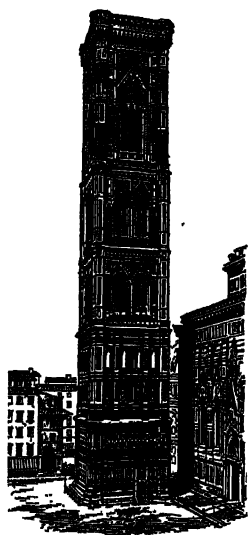


Fig. 68. Giotto's Tower, Florence, Italy. Cathedral shown at the right.

“Of all the beautiful things with which Giotto adorned his city, not one speaks so powerfully to the foreign visitor as the lovely Campanile which stands by the great Cathedral. The enrichments of the surface, which is covered by beautiful groups set in a graceful framework of marble, with scarcely a flat or unadorned spot from top to bottom, has been ever since the admiration of artists and of the world. The structure affords us that soft ecstasy of contemplation which art so seldom gives, though Nature often attains it by the simplest means, through the exquisite perfection of a flower, or the stretch of a summer sky.”

Ruskin says of it: “And if this be, as I believe it, the model and mirror of perfect architecture, is there not something to be learned by looking back to the early life of him who raised it? Not within the walls of Florence, but among the far-away fields of her lilies, was the child trained, who was to raise that headstone of Beauty above her towers of watch and war. Remember all that he became: count the sacred thoughts with which he filled the heart of Italy.”

#### ANECDOTES OF GIOTTO.

The story of Giotto's life is like a fairy-tale. It is said that, when Cimabue, the painter, was quite old and very famous, he was riding in the valley of Vespignano, a few miles from Florence, and saw a shepherd-boy, who, while his flocks were feeding, was making a picture of one of his sheep on a bit of slate with a pointed stone. Cimabue looked at the sketch and found it so good that he offered to take the little Giotto—who was only

— the towers with spires, the many pinnacles, including the large one marking the place where the nave and transepts cross, the pointed windows rich with tracery, the apse in the rear, and the many buttresses and flying buttresses. Cologne Cathedral was begun in 1248 and, with many periods of inactivity, was finally finished in 1880. The exterior is rich in sculptured ornament, and the imposing interior is lighted by stained-glass windows. There is no cathedral that so entirely dominates a town as this one. You will probably never forget the day you first arrive there on the train, particularly if you are lucky enough to come in as the sun is setting behind the great mass of the cathedral. Cologne is one of the quaintest of cities and coming as it usually does before or after a Rhine journey, it always leaves pleasant memories.

#### OTHER GOTHIC MONUMENTS.

The Cathedral at Amiens, France, shares the honors with Notre Dame as the most beautiful of Gothic monuments. Figure 70 gives us the west front. Notice the built-out doorway, and

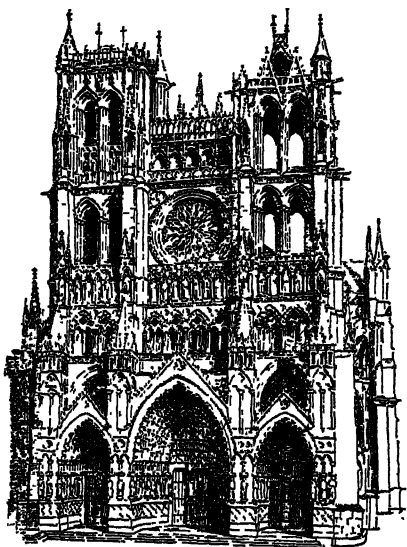


Fig. 70. Amiens Cathedral, Amiens, France.



in Figure 71 which shows the choir, note the richly carved stalls along the sides and the appearance of the pillars



Fig. 71. Choir of Amiens Cathedral,  
France.

and vaulting and the wheel-window in the rear. It is a typical Gothic interior.

Milan Cathedral deserves a special word of description because, besides being the largest of all Italian Cathedrals, excepting

St. Peter's, it is beyond doubt by far the most remarkable. The great width and height of the church, the vistas across it, the dazzling rays of sunlight which, at morning and evening especially, stream through the great aisle-windows, all combine to make it one of the most marvelous interiors in the world. One thousand or more statues adorn the exterior.

Graceful, grotesque, with ever new surprise  
Imagination's very self in stone.

*Lowell.*

## THE RENAISSANCE

We now come to one of the greatest periods of the world's history called the Renaissance. This period, beginning about the year 1500, produced a new style of architecture which gradually displaced the Gothic. It was called the Renaissance style, but before we inquire what it was like, we will try to see how it came about that a new style should appear.

On account of the great accumulation of wealth, men now had leisure to study, and their study led them to learn about the Greeks and Romans and the wonderful things they had done in literature, sculpture, and architecture. This study became a world-wide interest, making people of taste wish to imitate the old arts, and because they did so, and revived, and brought to life the classic beauties of an older time, the new style was called the Renaissance, or new-birth. For hundreds of years previous to this the people of Europe had not been much interested in these things. The Romans conquered the world; but Rome fell, and the barbarous races, that overflowed Europe, had to live hundreds of years before they became as educated and cultured as the people they superseded. Although these are sometimes called the Dark Ages, real progress was being made all the time. New languages came into being, and, as the people became less warlike, they began to enjoy peace and to found homes

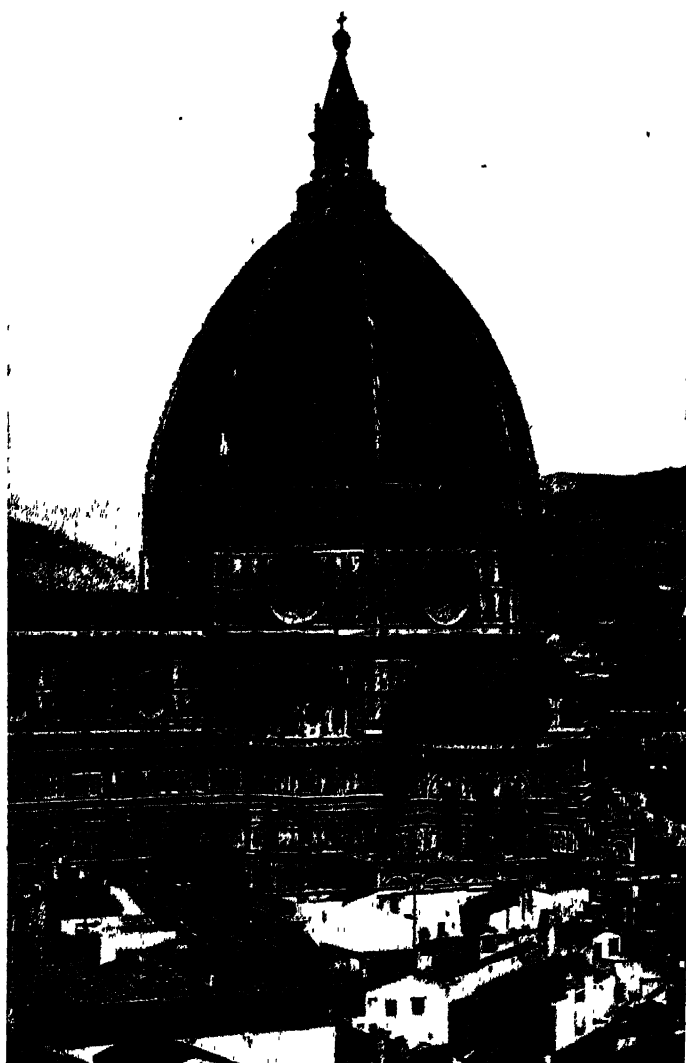


Fig. 72. The dome of the Cathedral, Florence, Italy. See description on pages 166 to 170.

and accumulate money. In this way they got ready for the new kind of life that was to come; and Italy, first of all, because she first became rich and prosperous and secure. Her cities were in a more civilized state and enjoyed comforts and luxuries unknown elsewhere.

The men of this time added much to the older civilization. Printing became an art, and gunpowder put an end to the old ideas of battle. The art of painting, with Michaelangelo, Leonardo da Vinci, and Raphael, revealed a new life to the world, and sculpture almost breathed the breath of the antique work of Greece. As we go through Italy to-day we may see how every city and hamlet was being stored richly with countless beauties during this time. Architecture was revolutionized under the influence of Brunelleschi, Michaelangelo, Bramante, and a few others.

In these Renaissance days a few great minds came forward in each of the arts, renewed them, and made them great. Things had changed since the times when a certain type of building and a certain type of ornament were impressed by guilds upon all the workmen of the world, for now a single individual, having a great idea, might set the pace. Every new thing worth having begins as an idea in some one's mind, and this Renaissance was a period of freedom of thought where a few men's ideas could not be forced upon every one to the same extent as formerly. If men followed the great ideas of a Brunelleschi, or a Michaelangelo, it was through love of them, or appreciation and enthusiasm for their works. This spirit of freedom has been growing in the world ever since.

We may safely declare that the Renaissance brought a new world of thought, a new era of freedom, that it was a period of true advance in the world when men learned to value themselves, and that it put a new meaning into the individual lives of men. But, when we have said all that we can in favor of the Renaissance, let us also remember that there are many people who think there was never anything so beautiful in architecture as that of the ages that preceded it.

It is hardly possible to speak of the Renaissance without mentioning the great family of the Medici, the most powerful family of Florence, and probably the greatest in the annals of Italy. Florence was the birthplace of the Renaissance, and art and letters grew and flourished very largely under the patronage of this rich family, whose sons became rulers of other states, or became Popes, and whose daughters married royalty.

The best known are Cosimo and his grandson, Lorenzo. These men, each in his time, held a great court, built beautiful palaces, and lived a life of great luxury. When they discovered a man of genius in the arts they would give him commissions, take him into the court, dine him at table with other men of intellect and power, and so they encouraged the arts, and must have had much to do with the preëminence of Italy in the world of art.

Thus it is that so many of the greatest and most beautiful things in the world are named for them. We first read of Michaelangelo copying statues in the gardens of the Medici, and when we go to Florence we see his wonderful creations in the tombs of the Medici. We also visit the Uffizi gallery to see the Venus de Medici. In

fact Medici is written large even in the Florence that remains to-day.

#### CHARACTERISTICS OF RENAISSANCE ARCHITECTURE.

In a word, the characteristics of the Renaissance buildings are those of Greece and Rome applied to new and different kinds of buildings. Having studied the Greek and Roman buildings, we can best become acquainted with the Renaissance buildings by looking carefully to see where and how the Greek, or chiefly the Roman, characteristics were built into the palaces, villas, town-halls, and into the great churches with their lofty domes.

First of all, the dome set on a pillared drum and crowned with a lantern, the whole surmounting a church edifice, was the one great original production of the Renaissance. We see this in the Duomo at Florence, and in St. Peter's and St. Paul's in the following pages. The wonderful palaces of Florence and Rome and later the chateaux of France show the old Greek and Roman forms applied in new and beautiful ways. The town-halls and guild-halls of the great European cities were, many of them, treated in this way and were called Renaissance. The Renaissance style applied to the fronts, or façades of buildings along the fine streets of the time created a street architecture of a noble sort which one may recognize and study in hundreds of cities.

We have emphasized the meaning of "structural" in architecture, but, aside from the dome, the Renaissance architects did not do much that was new in structure. In fact they rather ignored structure in their use of columns, which supported nothing, and of engaged columns

used only for ornament. Rich ornamentation was one of the chief characteristics of the buildings of the time and the semi-circular arch copied from Roman architecture was everywhere employed. Interior decoration also became very splendid.

Symonds says that, what the architects did was, after familiarizing themselves with the remains of ancient Rome, and assimilating the spirit of Roman art, to clothe their own inventions with classic details. This is a good, brief definition.

The form and structure of their edifices was modern; the parts were copied from antique models. A want of organic unity and structural sincerity is often the result of those necessities under which a secondary and adapted style must labor, and thus even the best Renaissance buildings display faults.

When the buildings of the new style began to appear, the then existing buildings had no hint of the Greco-Roman styles—the churches were Gothic with high pointed arch and delicate tracery, the castles and keeps were stern towers, the home a plain building.

Then in a hundred years, or even less, we see a complete change. All the new buildings are in the new style, ornamented with columns, entablatures, and pediments. The dwelling houses are no longer poor and mean, but fine, often magnificent. The villa has appeared, the mansion and the university. Except for the great domes of the churches, the new architecture consisted largely in adapted Greek and Roman features, and as these features were mostly present as decorations on cornices, doorways, windows, and balconies, a study of these four

features would acquaint us with the appearance of the Renaissance style.

The doorway usually had a border around it covering the lintel and the jamb. At either side were antique



Fig. 73. Renaissance palace doorway.

columns, or pilasters, while across the top were the architrave, frieze, and cornice, probably copied from some building of ancient Rome. The whole doorway was surmounted by a pediment or, perhaps by a curved and scrolled variation of it.

The windows were similarly treated. Sometimes the curved top, sometimes the triangular were used. Often the two would be alternated along a

façade. One or both were present in endless variety.

We may think of the builders of these façades as of an artist painting a picture. The space that he had to fill we may imagine to have been at first a blank white canvas. The architect could apply his colors in the colors of his building stones or marbles; he could give texture by the roughness or smoothness of his materials. The chief things were the masses, and the lights and shades,



which he could apply by means of his windows, doorways, cornices, and moldings, and by the projecting courses of masonry. He could arrange different colored stones and marbles so as to produce a pattern for the sake of decoration, as is so beautifully done on the front of the Doges' palace at Venice. Wherever stones were raised or brought forward, lights would appear, and receding parts would be veiled in shadow. All the rules that would rightly govern an artist in composing a picture would apply to the composition of the façade. Different treatment would be needed, as of course you



Fig. 74. Rococo. An interior in Baden, Germany.

see, and the architect would so plan as to have the result express the uses and meaning of the building.

It is a general truth that each style began in simplicity and gradually grew more complicated. It was so with the Renaissance, as we shall see while tracing its growth and decline. Its history is divided

by Professor Hamlin into four periods, as follows:

The Early Renaissance or Formative Period, 1420-90,

characterized by the grace and freedom of the decorative detail suggested by Roman art, and applied to compositions of great variety and originality; the High Renaissance of Classic Period, 1490-1550, during which classic details were copied with fidelity, the orders appearing in nearly all compositions; the decline (called also the Baroque), 1550-1600, a period of classic formality characterized by the use of colossal orders, engaged columns, and rather scanty decoration, followed by the vulgar extravagances of the Baroque; and the Rococo, 1600 to

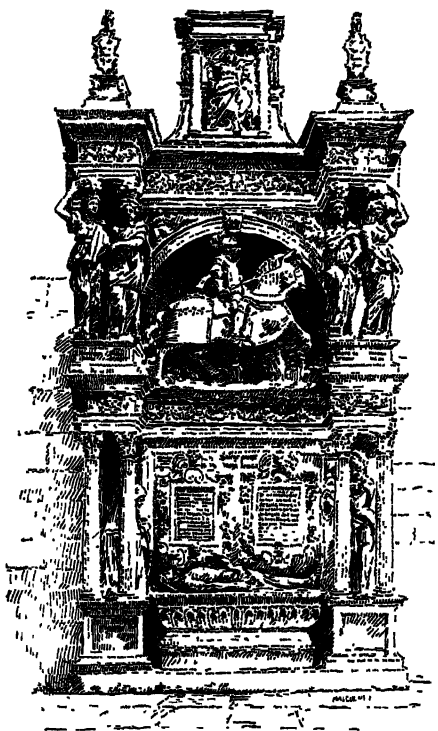


Fig. 75. Ornate Renaissance tomb in the Cathedral of Rouen, France.

1700, a period marked by poverty of invention, and a predominance of sham and display in decoration, huge scrolls, florid stucco work, and general architectural impropriety. Figure 74 represents a Rococo interior with its meaningless assemblage of scrolls, and Figure 75 an ornate Renaissance tomb.

## THE DUOMO — FLORENCE.

The spirit in which the Florentines undertook this great work of architecture is shown in the noble sentiment embodied in the official document by which the council of the city decreed the erection of their cathedral:

“A government should undertake nothing unless in response to the desire of a heart more than generous, which expresses in its beatings the heart of all its citizens united in one common wish; it is from this point of view that the architect charged with the building of our cathedral must be regarded.”

The baptistery of the Florence cathedral had been built in an earlier age (in the Romanesque style), and was used for some time as a cathedral. It is really the first cathedral. Then came the cathedral proper which is Gothic. The campanile, although not round like the one at Pisa, was built for the same purpose, and is also Gothic.

We have glanced at this while studying Gothic architecture.

Now a whole age later we come to the dome, which was the first great work in architecture of the Renaissance in Italy.

Let us notice one contrast in the building of this dome and the building of the cathedral at Pisa. At Pisa, as was the case with most of the great Romanesque and Gothic buildings, the work was all done along the same general lines, and by the labor of the guilds. At Florence we find one great master mind taking a new bent

and laying the foundation of a great new style in the dome of the cathedral. This mind was Brunelleschi's and the work of individual men was so influential that we see a few such men as Brunelleschi, Bramante, and Michaelangelo shaping a new style. The story of these few men is the story of Renaissance building in Italy.

At the age of twenty-two, the sculptor Ghiberti had won in a contest with Brunelleschi with his design for the bronze doors of the baptistery. With his friend Donatello, Brunelleschi then left Florence and made his way to Rome as a goldsmith. All his spare time he gave to studying the architecture of the Old Roman Empire, taking measurements of the finest buildings as students do still. When he came back to Florence his head was full of a scheme for completing the cathedral which had been under way for 110 years and was still unfinished.

There were many schemes in Florence of how the dome should be built and in 1417 the council, to settle the question, received many different proposals. One suggested a central pillar; another that the space under the dome should be filled up with earth in which gold coins should be placed so that after the dome was completed the poor would remove the soil to get the money, but no one believed it could be built without support from within. Brunelleschi alone felt confident, and was given the work, but the commission also appointed Ghiberti, his successful rival on the doors, to be his colleague. Ghiberti was not an architect, and was not fitted for his task. Vasari tells us how Brunelleschi got rid of him.

"One morning," he says, "Brunelleschi, instead of

appearing at work, stayed in bed, tied up his head, and calling for hot fomentations, pretended to have a severe pain in his side. This lasted for several days and, as Ghiberti did not know how to direct the work, it all came to a standstill. When the leading men came to his bedside he asked them why they did not ask Ghiberti. 'He will do nothing without you,' they said. 'But I could do well enough without him,' said Brunelleschi. However, Ghiberti continued to draw his salary.

"Finally, Brunelleschi suggested that, as the salary was divided, the work should be also. He presented himself to the commissioners, and told them that there were two difficult things—the bridges upon which the masons were to stand and the chain to bind together the sides of the cupola. 'Let Ghiberti take one and I will take the other.' This plan being adopted, Ghiberti took the chain which he was unable to manage, and was at last removed."

The great dome at Florence was built on newly applied principles. The previous domes, such as that of the Pantheon, did not give much external effect. The great dome, which Brunelleschi succeeded in erecting, far exceeded in grandeur and beauty anything of its kind that had been executed before. It is octagonal in form, and painted. It springs from the top of an octagonal drum and there are two separate shells of masonry, with space between. Eight vast ribs, and walls of masonry, rise and converge towards the opening at the top, and between each of the eight major ribs are two smaller ribs. The dome is capped by a lantern after Brunelleschi's design, but it was built after his death.

Vasari says of the Dome: "Heaven willed, after the earth had been for so many years without an excellent soul or a divine spirit, that Filippo should leave to the world from himself, the greatest, the most lofty, and the most beautiful construction of all those made in the time of the moderns, and even in that of the ancients."

Michaelangelo turning back to gaze upon Filippo's work, as he rode away from Florence, declared that he could not do anything more beautiful.

The beauty of the past in Florence is like the beauty of the great Duomo. Contrast Ouida's description with the isolation of Pisa's pile:

"About the Duomo there is stir and strife at all times; crowds come and go; men buy and sell; lads laugh and fight; piles of fruit blaze gold and crimson; metal pails clash down on the stone with shrillest clangor; on the steps, boys play at dominoes, and women give their children food, and merry-makers join in carnival fooleries; but there in the midst is the Duomo all unharmed and undegraded, a poem and a prayer in one, its marbles shining in the upper air, a thing so majestic in its strength, and yet so human in its tenderness, that nothing can assail and nothing equal it."

In the piazza:

On the stone  
Called Dante's,—a plain flat stone scarce discerned  
From others in the pavement,—whereupon  
He used to bring his quiet chair out, turned  
To Brunelleschi's church, and pour alone  
The lava of his spirit when it burned:

It is not cold to-day. O passionate  
Poor Dante, who, a banished Florentine,  
Didst sit austere at banquets of the great  
And muse on this far-off stone of thine,  
And think how oft a passer used to wait  
A moment in the golden day's decline,  
With "good night, dearest Dante" . . .

## STORIES AND ANECDOTES.

Vasari, in his *Lives of the Painters, Sculptors and Architects*, says of Brunelleschi, a good friend who always had time to bestow help:

There are many men who, though formed by nature with small persons and insignificant features, are yet endowed with so much greatness of soul and force of character, that unless they can occupy themselves with difficult—nay, almost impossible undertakings, and carry these enterprises to perfection to the admiration of others, they are incapable of finding place for their lives. And, however mean or unpromising may be the occasion presented to such persons, however trifling the object to be attained, they find means to make it important, and to give it elevation.

Therefore, it is that none should look with contemptuous glance upon those who lack grace and beauty, since it is beyond doubt that beneath the clods of earth the veins of gold lie hidden.

Hawthorne says that the interior, lighted as it is almost exclusively by painted windows, seems to him worth all the variegated marbles and rich cabinet work of St. Peter's.

We recall the preaching of Savonarola in the fifteenth century. In the middle of the night crowds came to await the opening of the cathedral when they might hear

the words of the great preacher who was destined afterwards to be burned alive nearby.

And some one has said that even the heavens seemed envious of the dome, for their lightnings perpetually strike it.

#### PALACES OF THE RENAISSANCE IN FLORENCE.

One of the most notable products of the entire Renaissance was its palaces. They took on a different form in the beautiful chateaux of France, or in the Louvre, than in Florence. But Florence produced some of the finest and most remarkable palaces, as one should expect, knowing it to be the home-city of the Medici. And since we are still in Florence let us see what they are like.

To begin with, in the principal *piazza*, or square, is the Palazzo Vecchio. Now, as in the old days, it is the city hall, whose tall tower with overhanging top is almost as much a part of the landscape as the great Duomo itself.

Another famous building in Florence is the Pitti Palace which, with the wonderful Boboli Gardens at its back, makes one of the world's most sumptuous palaces. What treasures it contains in its masterpieces of painting! It is on "the other side of the Arno," but is connected by a covered gallery, which is the top-story of that famous bridge, the Ponte Vecchio," with another great palace across the river Arno, the Uffizi Palace, also a treasure-house of painting and sculpture.

The Pitti is very massive, some of its rough stones being twenty feet long. It has been called the most fa-



mous of all modern palaces. It dates from Brunelleschi himself, though he did not finish it. The method of leaving the whole or most of the outer face of the big blocks of stone just as rough as when it came out of the quarry produced one of the finest effects known in architecture. In the Pitti the lower stones had the roughest masonry which made it look stronger than the other stories. As it had to support the upper stories this was fitting, and we see the same thing in very many of the great buildings of to-day. When you see them, think of Brunelleschi.

The Bargello palace, whose beautiful courtyard has been painted by a thousand artists, is another of Florence's gems of architecture. Nearly all the Florentine palaces were built around a courtyard. Most of these palaces were built for defense as well as for residence, and that is why they are so massive. We may still see the lamps of iron, and the rings where the men of old thrust their torches, or to which they tied their horses. To-day these examples of intricate iron-work appear to be as good as ever.

As general features of these palaces, we may note the rich cornices and the ever present Renaissance style of doorway and of window. The second story, higher and grander than the others, was called the *piano nobile*, or noble story. In this story were the loftiest and grandest rooms.

In looking at the pictures of palaces, consider in what ways, and how, they conform to the principles given on page 11. Much of their beauty you will find to be in the columns and features borrowed from the old Ro-

mans, and in the manner they are distributed over the façades.

## ANECDOTES OF MICHELOZZO MICHELOZZI.

(1396-1472)

Michelozzo designed one of the great palaces of the Renaissance in Florence, now called the Ricardi, and Cosimo de Medici caused it to be erected. An early account of this palace says it was the first to be erected according to modern rules. A description of the same time says that, in the first or ground floor, are two courtyards with magnificent colonnades, on which open various salons, bed-chambers, ante-rooms, writing-rooms, offices, baths, kitchens, all most commodiously arrayed.

In the year 1433, when Cosimo was exiled, Michelozzo, who loved him greatly, voluntarily accompanied him to Venice, and, when Cosimo was recalled by his country, he returned in triumph, and Michelozzo with him.

It was of this great architect that Vasari wrote: "If all who inhabited this world would consider that they may have to live longer than they can work, there would not be so many who are reduced to beg in old age, that which they have squandered in youth. Thus they will do what Michelozzo did, and not be compelled in their last years to go about miserably seeking the means of existence."

## ST. PETER'S, ROME.

It has been said that St. Peter's shows how men build their best, and how they build otherwise than they intend. The great pile occupied two long centuries of labor be-

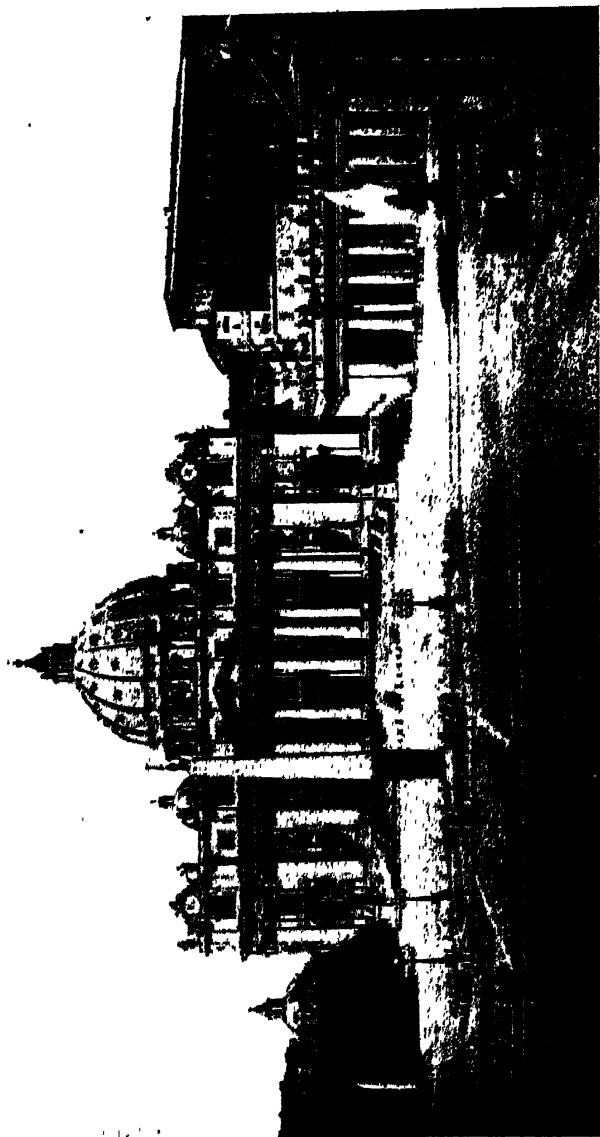


Fig. 76. St. Peter's, Rome. For description see pages 173 to 178.

fore it was finished, if, indeed, it can ever be said to have been finished.

Under Alberti and Rossellino there was a beginning period of early promise. The general design of the building as it appears to-day may be said to be that of Bramante, although it was altered much by Michaelangelo, who designed the dome and brought the structure to all the magnificence of which the style was capable. In other words Bramante conceived the idea of the structure which was to be the greatest church in Christendom, but Michaelangelo chose and designed the form in which the idea was carried out. He made the details of the plan for the outside and inside orders, and the dome. The first serious departure from these great artists' ideas was due to Maderno, who is responsible for the façade. To Bernini is due the noble approach of columns.

Bramante began to build in 1506. His design was a Greek cross with aspidal arms, the four angles occupied by domed chapels. Too hasty construction led to the collapse of some of the arches and to long delay in construction after his death.

Figure 77 presents an outline detail of a part of the dome of St. Peter's. The part marked A is the attic story of the church. The part marked B is the attic of the dome. Notice the columns and their capitals, and their arrangement, and the pilaster of the attic story of the church, and the windows and balustrade.

One fault that has been found with St. Peter's is the fact that the front extends so far forward that the effect of the beautiful dome is largely lost. In fact if one

stands at a point where one might feel he ought to get the full effect of the mighty pile, the dome is nearly hidden. In the picture on page 174 you get very little detail, but you can probably decide to what orders the col-

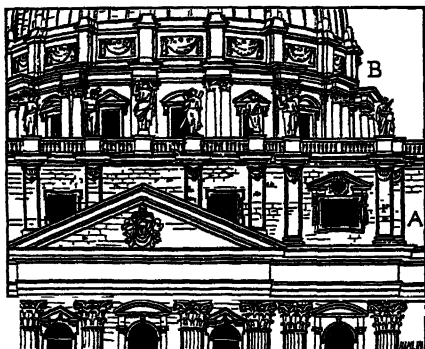


Fig. 77. Attic of St. Peter's, Rome. A, attic of the main edifice; B, attic of the dome.

umns and pilasters belong. Count those upon the façade and notice their arrangement. Notice the many statues that adorn the colonnade and the top of the façade. One of the finest views of St. Peter's is from the Pincian Hill, one

of the seven hills of Rome. This hill is now a favorite promenade of Romans and tourists alike. St. Peter's, seen from this distance, dominates the whole landscape, and as the sunset sky of afternoon illumines it, the sight is one never to be forgotten. The expense of the main building is estimated at fifty million dollars, and the annual repairs at over thirty thousand.

In the building, stones from other churches were very largely used and great damage was thus done. The south wall rests upon blocks of stone upon which once a tier of seats of Nero's circus was built from which the proud citizens of Rome witnessed the struggles with lions of defenseless men, women, and children whose only crime was that they were Christians. It takes

50,000 people to make a crowd in the church, and more than 80,000 sometimes attend service there at one time. Between the summit of the façade and the drum of the dome one may see a little hamlet with workshops, huts, sheds, a forge, and ovens. Several families find a home on the roof of St. Peter's and succeed each other from father to son.

Mendelssohn says: "It surpasses all powers of description. It appears to me like some great work of nature, a forest, a mass of rocks, or something similar; for I never can realize the idea that it is the work of man." And Byron says of the interior:

Enter: its grandeur overwhelms thee not;  
And why? It is not lessened: but thy mind,  
Expanded by the genius of the spot,  
Has grown colossal and can only find  
A fit abode wherein appear enshrined  
Thy hopes of immortality; and thou  
Shalt one day if found worthy, so defined,  
See thy God face to face, as thou dost now,  
His Holy of Holies, nor be blasted by his brow.

At the right of the picture we see the top of a long, irregular building. This is part of the palace of the Vatican attached to the great church. It is one of the world's great treasure-houses of art. Pliny says that an oak stood in the Vatican region which had been worshipped from time immemorial. Thus the name now applied to the Papal Palace was once applied to the whole district between the foot of the hill and the Tiber. On the return of the popes from Avignon in 1377, the Vatican became the official residence, and the first conclave

was held there in that year. On January 23rd of that year, five large wolves were killed in the Vatican gardens. Nicholas V formed the idea of making it the most magnificent palace in the world, but he died before he could carry out his design.

It is now the largest palace in the world, its length being 1151 feet and its breadth 767 feet. It has eight grand staircases, twenty courts, and 11,000 rooms of different sizes.

Its collection of sculpture is the largest in the world, its picture-gallery, though not extensive, is one of the most precious, and its library is of untold value. In addition to the picture-gallery, the wonderful frescoes of Michaelangelo in the Sistine Chapel, and the works of Raphael would alone make it a great mecca of art. The small portion of the Vatican inhabited by the pope is only seen by those who are admitted to a special audience. The rooms occupied by the pontiff are furnished with great simplicity.

#### ANECDOTES OF LEONE BATTISTA ALBERTI (1404-1472).

Alberti was a gentleman of many accomplishments. He could ride an unbroken horse, jump his own height, and throw an apple over the Duomo of Florence; but he was also a scholar, a writer, indeed a man of universal sympathies.

He is better known for his writings than from the practice of his art. Before he was twenty, he had written a comedy in Latin; and his books on architecture, perspective, and painting had so much influence on others

that many supposed him a greater architect than those who really surpassed him.

Vasari says of this: "We are thus taught by experience that in so far as regards name and fame, the written word is that which of all things has the most effectual force, the most vivid life, and the longest duration."

#### ANECDOTES OF BRAMANTE DA URBINO (1444-1514)

This great master was born in Urbino about 1444, his parents being very poor. In his childhood he was taught to read and write, and was early devoted to drawing and the art of painting. Arithmetic became his favorite study.

He soon developed a love for architectural study and perspective, and, in order to learn more he departed to Lombardy, going from one city to another and working as best he could. He reached Milan where he gave much time to the study of the great Gothic cathedral there. From there he went to Rome. He had some money with him, and it was his desire to spend it very slowly, that he might have leisure to make accurate measurements of the ancient buildings. In solitude and deep thought he carried this out to completion, measuring all the buildings of antiquity situated in Rome and all the surrounding country, going as far as Naples in his quest.

Here he became known to the cardinal of Naples, who began to favor his progress. For the cardinal he built a cloister, which was the beginning of his reputation and success. As we see in most lives, the hard thing was



to get a start. Upon this beginning other commissions followed, and Bramante was invited to consult with eminent architects regarding the building of a new palace. All his works proving successful, he soon had much credit in Rome, and distinguished personages employed him in important undertakings.

He did much at Bologna also, making ground plans for numerous edifices, which were very fine in proportion. He imparted instruction in the rules of architecture to Raphael, who afterwards painted his portrait into one of his famous works, "The School of Athens."

But his greatest work was on St. Peter's. He laid the foundations of this stupendous church, and continued his labors upon it until his own death. He raised the building to the height of the cornice, but after his death the plans were much altered by Raphael and Antonio san Gallo, and afterwards by Michaelangelo. Michaelangelo himself remarked that he was only executing Bramante's design, and that it was the master who founded a great edifice who ought to be regarded as its author.

Vasari says that Bramante was a person of most cheerful and amiable disposition, delighting to do everything whereby he could bring benefit to his neighbor. He delighted greatly in poetry and music, practising upon the lyre and occasionally composing a poem. The event of his death in the year 1514 at the age of 70 years caused the erection of St. Peter's to be suspended for several years. He was entombed in St. Peter's. His death was a loss to architecture for his investigations led to the discovery of many useful inventions that enriched the art. He was to the second part of the Renaissance what

Brunelleschi had been to the first and he rendered the road to the true science of architecture much easier to all who came after him.

ANECDOTES OF MICHAELANGELO (1474-1564).

Michaelangelo was undoubtedly the greatest of all artists. Not only as a painter, but as a poet, a sculptor, and an architect he was able to carry all before him. His brain was full of ideas — more and greater than he could carry out. His life was one of sorrow, and although rich, he did not care for luxury — his mind was too great and too earnest to be taken up with small gratifications. He knew that pleasure was not worth the time it took.

In the year 1546 it chanced that Antonio da San Gallo died; a director for the fabric of St. Peter's was required, and there were various opinions as to who should be entrusted with the office. Being asked if he would undertake the work, the master replied that he would not, architecture not being his vocation; but when entreaties were found useless, the pope commanded him to accept the trust, and, to his infinite regret, he was compelled to obey.

Of the work already done, he would often publicly declare that the building was left without light, and that too many ranges of columns, one above the other, had been heaped upon the outside; adding that, with its innumerable projections, pinnacles, and divisions of members, it was more like a work of giants than of the good antique manner, or of the cheerful and beautiful modern style. He made a model to prove the truth of his words,

and this was of the form wherein we now see the work to have been conducted. Much, that was true at the time Vasari wrote, was afterwards changed, but where Michaelangelo made changes, he took care to have all constructed with great exactitude, adding a degree of strength which would leave no pretext for another to change his plans.

He executed many other buildings, and the capitol at Rome, as it stands to-day, is mainly from his plans, although executed after his death.

For his work upon St. Peter's he accepted no compensation.

Like most of the architects of the time, Michaelangelo was painter and sculptor as well. St. Peter's contains one of his greatest works of sculpture, the *Pieta*, and his triumph in painting, the *Last Judgment*, and the ceiling of the *Sistine Chapel*, in the palace of the Vatican nearby. Michaelangelo's was the master mind that overtopped all others, even in the great age in which he lived. He lived to see all his rivals die and to find himself acknowledged the greatest of all. At the last he also found himself beloved, and his old age was happier than his earlier lifetime.

#### ANECDOTES OF RAPHAEL (1483-1520).

Raphael Sanzio is seldom thought of as an architect, and yet for a time he was the director of the architecture of St. Peter's. Besides this work, which was not as important as that of the other masters who contributed to St. Peter's, he built a few notable buildings. His great fame rests on his work as a painter. At one time he

lived near the Vatican, where he was surrounded by his hosts of friends. His disposition to help others may account for his popularity. In the very prime of manhood, the possessor of fame, wealth, and power, he was suddenly seized by a fever and died within a few days. His resting place is the Pantheon at Rome.

#### THE DOGES' PALACE.

"The Ducal Palace, the great work of Venice, was built successively in three styles." First, there was a

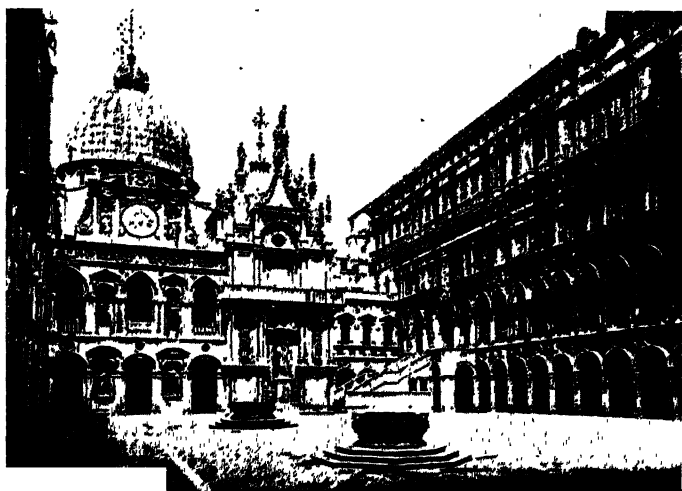


Fig. 78. Interior court of the Doges' palace, Venice.

Byzantine, then a Gothic, and then in part, a Renaissance palace. The present building is a combination of the last two styles. The earlier building which began with the beginning of Venice is nearly or quite destroyed by fire and time.

In the first year of the fourteenth century, the Gothic Ducal palace was begun. "It is the Parthenon of Venice," says Ruskin. One hundred and twenty-three years afterwards the first Grand Council sat in the finished Gothic building.

From that time on Renaissance features began to appear and the portion where that style reigns was finished about the middle of the sixteenth century (1550). A fire partly destroyed the building in 1574, and the extensive changes which were then made left the building in its present form. As it now stands the façade seen from St. Mark's Square, and standing as next neighbor to the Cathedral of St. Mark's, is Gothic or Venetian Gothic. But the interior court, which is of a much later date, is Renaissance or semi-Renaissance, although there are some pointed arches and Gothic features left from the earlier building.

Notice the giants' stairway, so-called from the figures at the top. These figures were colossal statues of Neptune and Mars typifying the strength of Venice by sea and in war. Over the arch at the top of the staircase is the Lion of St. Mark. On the top stairs the doges, or rulers of Venice, were crowned. In the court are two beautiful well-curbs, which should be noted, because they are a typical feature of the courtyards and squares of Venice. Connecting the palace with its prison is the well-known Bridge of Sighs, celebrated in Byron's verses. It was built in 1590, and the dark dungeons to which it leads speak of the inhuman punishments of those and earlier times.

One thing which makes the Doges' Palace one of the

few famous buildings of the world is its contents, especially the famous paintings of Tintoretto, Paolo Veronese, Titian, and others. We should remember that these were executed an age later than the building itself.

You will note the elaborateness of everything, the richness of the materials, and the wonderful carvings. When you visit it, with your guide-book in hand, you will learn what a wealth of allusion is contained in the sculptures alone. Some of these represent local stories and traditions, but many refer to the Greek gods and goddesses. One might expect this from the fact that the whole movement, called the Renaissance, began in a study of the classical forms of art.

One singularity of the Doges' Palace is, that its front is built of marble of various colors arranged to produce a pattern. The best colors for a building are those of natural stone. Ruskin says that the front of the Doges' Palace at Venice is the purest and most chaste model of the fit application of color to a public building. The sculpture and moldings are all white; but the wall surface is checkered with marble blocks of pale rose, the checkers being in no wise fitted to the forms of the windows, but looking as if the wall had been completed first, and the windows cut out of it.

Ruskin also gives another bit of good description of the Doges' Palace:

"Sometimes when walking at evening on the Lido, whence the great chain of Alps, crested with silver clouds, might be seen rising above the front of the Ducal Palace, I used to feel as much awe in gazing on the building as upon the hills, and could believe that God had done a

greater work in breathing into the narrowness of dust the mighty spirits by whom its haughty walls had been raised, and its burning legends written, than in lifting the rocks of granite higher than the clouds of heaven, and veiling them with their various mantle of purple flower and shadowy pine."

Theophile Gautier says: "Think how much the sea and sky have to do with the charm of the great buildings of Venice. Take away the red sails of the fishing boats

and the gliding gondolas, and the building itself would have been less wonderful.

"The Grand Canal of Venice is one of the most marvelous things in the world. No other city can present so beautiful, so bizarre, and so fairy-like a spectacle; perhaps you may find elsewhere remarkable specimens of architecture, but never placed in

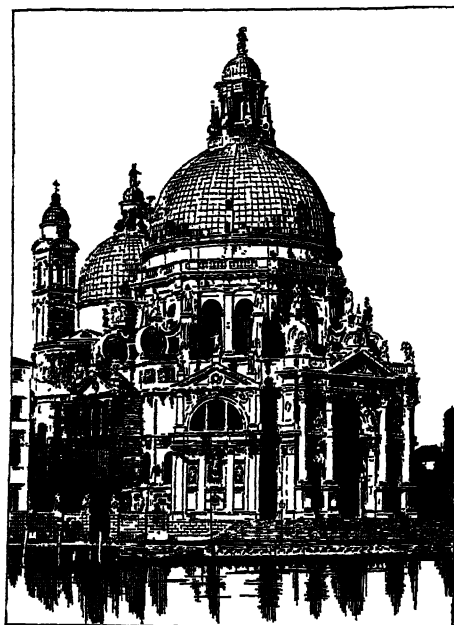


Fig. 79. Church of Santa Maria della Salute, Venice, 1632.

such picturesque conditions.

"Each stone of the walls has a story to tell; each

house is a palace; each palace a masterpiece with a legend. It is an immense gallery in the open air, where one can study, from his gondola, the art of seven or eight centuries. What genius, talent, and money have been expended in this space that can be traversed in less than an hour!"

Before leaving Venice we may take a look at the Church of Sta. Maria della Salute, which is in sight across the Canal from the Doges' Palace. This church was built in 1632, and is of the period of the Baroque churches, or even later, but it is a majestic edifice in very excellent style, and is one of the most picturesque, as well as one of the most famous of buildings.

#### ANECDOTES OF PALLADIO (1518-1580).

Palladio was the son of a carpenter in the employ of Frissino, a scholar and poet. Frissino adopted the carpenter's son, gave him the name of Palladio (from Pallas, Goddess of Wisdom), and educated him as an architect.

Palladio became one of the celebrated architects of the Renaissance. He designed palaces and many other buildings in his native home of Vincenza. In the neighborhood of Venice, where he died, are many edifices that he built. He was so highly esteemed that his style became known as Palladian, and was long considered the most perfect.

Palladio is often called the last great architect of the Renaissance. His writings were considered the most authoritative on the principles of classic architecture throughout Europe, and his buildings were models



of beauty during the seventeenth and eighteenth centuries and even up to this day. His buildings are de-

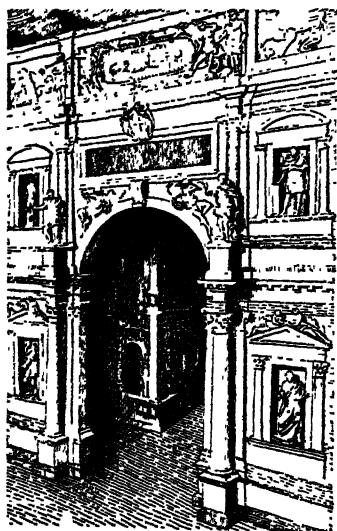


Fig. 80. Palladian architecture. Teatro Olimpico, Vicenza, Italy.

scribed as cold and unimaginative, but correct and elegant. ✱ Figure 80 is a theater in Palladio's native town of Vicenza.

#### OTHER RENAISSANCE BUILDINGS ON THE CONTINENT.

In giving the most rudimentary and general idea of the nature of the Renaissance style, we have done about all that these limited pages will allow. Germany had her great town-halls, palaces and castles in the Renaissance style, and Spain developed a very beautiful Renaissance. All over the European world, the movement for classical art had a new-birth, and it was a period of extensive building nearly everywhere.

In France the Renaissance was slower to take root, because the Gothic was so much beloved by the French; and when it did come, it was mingled with the Gothic for a long time. But there are many wonderful and famous buildings of the Renaissance style in France, such as the famous chateau-like Chambord, the extensive palace of Fontainebleau, and the immense edifice of Versailles near Paris, which every one visits. One of these great monuments of France, however, the

Louvre, was the finest and, although we have not the space to describe it in any detail, we must do a little more than to mention it.

## THE LOUVRE.

The Louvre introduces us at once into the world of the Renaissance in the North. We have seen something about how this great movement began in Italy. There it was a natural growth out of the conditions of

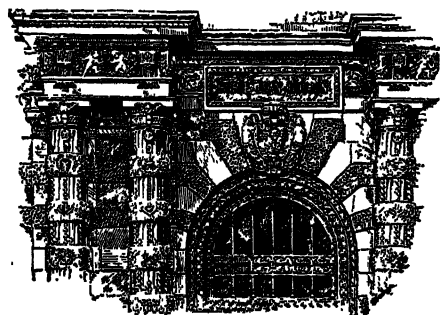


Fig. 81. Detail from the Palace of the Louvre, Paris, showing Vermicular masonry.

the time, but in France it has been called a fashion, and so it was. Renaissance architecture presents many variations in different countries, and there is a saying that each country, or people, works out its own Renaissance.

There is also a saying that the Renaissance has never stopped and is still going on in the world.

The Louvre is the noblest monument of the French Renaissance. Compared with the fortress-like palaces in Florence, the Louvre looks light and graceful, and yet there are many things to remind us that it was a development from the fortress type, or castle. The entrances open into protected court-yards, and could be shut by great doors, and there are also the barred windows of the lowest story. These are all reminiscences

of the times when palaces were castles for defense as well as residence. The earliest Louvre had its keep or dungeon. Indeed the building grew from a fortress which Philippe Auguste erected on the same site in 1200.

The vast size of the Louvre prevents its being shown in any one picture. There are many different buildings, in fact, connected and made harmonious, and much

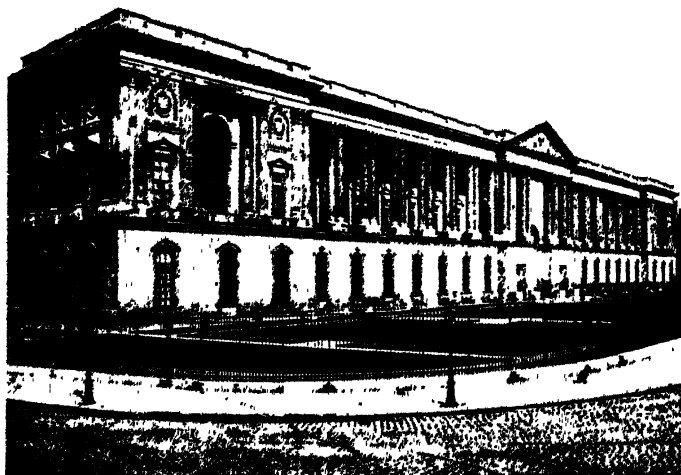


Fig. 82. Perrault's Colonnade of the Louvre.

that is best in three centuries of architectural design is represented. There are many variations in the different façades or pavilions, as they are called. One of the most beautiful is that designed by Claude Perrault for Louis XIV—1665–70, adorned with twenty-eight Corinthian pillars. A detail of the masonry is shown in Figure 81. This is made to appear thickly

indented with worm-tracks and is called Vermicular. The interior with its vast collection of art treasures, of more than twenty centuries, is its crowning glory. Illustrations of single schools may be surpassed elsewhere, but this is unrivaled as a balanced collection of ancient and modern art, of several nations, brought together for comparison and study.

The halls are almost as remarkable as the many paintings they contain, especially the four largest. First of all is the grand gallery, a quarter of an English mile

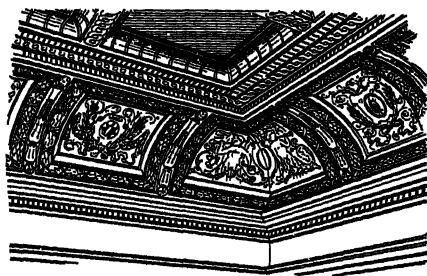


Fig. Coved ceiling, Louvre, Paris.

in length, with an oaken floor, a marble base, a round-arched ceiling, partly glazed, and grouped columns. The main surface of the walls is completely covered with Italian, Spanish, Flemish, and other pictures. Figure 83 shows the so-called coved ceiling of one of the galleries.

The Galerie d'Apollon, begun by Charles IX, was burned in 1661, rebuilt and repaired at different times, and finally completed in 1851, is 184 feet in length and 28 feet wide. The paneled walls are richly gilt and furnished with large portraits done in Gobelin tapestry. The ceiling is elaborate and splendid. Here the many works in crystals, metals, enamels, and jewels, are arranged in cases. A visit to the Louvre is one of the chief pleasures of Paris.

## SOME NOTED ARCHITECTS OF FRANCE.

*Claude Perrault*, who built the eastern side of the great court of the Louvre, having for its face the famous colonnade completed in 1674, was both a physician and an architect. The façade towards the river was also built by him, although not roofed until a hundred years later.

*Jacques de Gabriel* was the son of an architect and assisted his father in many undertakings. Upon the death of his father in 1742, and at the age of 44, he became the chief architect of Louis XV. Every visitor to Paris sees much of his work, for he designed the Place de la Concorde, which du Maurier called the Elysian Fields, and the colonnades of the Rue Royale. He also rebuilt the Central Pavilion at Versailles, and built the famous Petit Trianon there. In 1755 he was entrusted with the restoration of the Louvre.

*Charles Garnier*, born in 1825, was a famous French architect. He traveled extensively in Greece, Turkey, and other Mediterranean countries, returning to Paris at the age of thirty. He won the competition for the famous Paris Opera House, and finished the façade in 1867 and the interior in 1875. Another famous work of his is the Casino at Monte Carlo, Italy. He published many books.

*Eugene Viollet-le-Duc*, born at Paris in 1814, was both an archæologist and an architect. At the suggestion of his father, who was employed in the conservation of public buildings, he made a journey through France and Italy studying and sketching the monuments.

He was engaged in restoring important buildings, notably the Sainte Chappelle in Paris and the Cathedral of Notre Dame. He it was who designed the central spire and the great altar. In 1863 he was appointed professor of esthetics at the École des Beaux Arts, still the most famous institution of fine arts in Paris. His lectures were not according to the ideas taught at the school, and the students refused to listen to him. He resigned his position but published his lectures. His fame as a writer is almost as great as his fame as an architect.

## RENAISSANCE ARCHITECTURE IN ENGLAND

During the sixteenth century most of the building in England was of great country houses for the aristocracy. A form grew up, which was more Gothic than Renaissance, and it was called Tudor. The big houses and universities in this style are very handsome, and seem to suit the country where they are built. Two very famous buildings of this time are Hampton Court near London, and Haddon Hall in Derbyshire, the scene of Dorothy Vernon's romance. There are no more interesting buildings of their kind in the world.

Under Queen Elizabeth foreign architects were employed and much building was done. Gradually the classic forms began to supplant the Gothic, and, under Inigo Jones (1572-1652), a number of large and dignified edifices arose, such as the palace of Whitehall.

Sir Christopher Wren, the designer of St. Paul's cathedral in London, did the most notable work in English Renaissance.

## ST. PAUL'S, LONDON.

The largest and most modern of the English cathedrals, was erected under the supervision of one architect, one master-mason, and one bishop, who lived to see it built, between 1675 and 1710. Sir Christopher Wren laid the foundation of the existing building June 21,



Fig. 84. St. Paul's Cathedral, London.

1675. It is built on the site of a former structure, one of the grandest of medieval churches, which was burned in the great fire in 1666.

Wren's trials were various and great, and in some things he erred, yet he proved to be, as a man and an architect, one of the noblest produced by his country, and his triumph after long struggles was such as few men secure.

The position of St. Paul's is noble and appropriate, and has sufficient elevation to give due prominence to the chief church of a mighty city, from the very heart of which the vast form arises amid the people in their daily life. It is the great landmark of London.

The exterior, the first thing to strike the eye of the traveler as he approaches from a distance, shows, throughout, two orders in two lofty stories, two high western towers or cupolas, and the immense mass of the dome, the drum of which is girdled by a colonnade.

St. Paul's is built in the form of a cross and bears a strong resemblance to St. Peter's at Rome. Its length from west to east is five hundred feet. The exterior is of two orders, the lower story Corinthian, and the upper story Composite. The lower story front, with its long and wide flight of steps, is very impressive as we come down the crowded Strand on the top of a 'bus. We notice the columns of the porch, while at right and left the wall is broken by pilasters and blind windows of the Renaissance pattern, but not very much ornamented. The second story presents similar features, but notice the central part surmounted by a pediment, the gable filled with sculpture. The dome is the crowning feature. Compare it with St. Peter's and the one at Florence. The height of the dome of the Pantheon is the same as its diameter, that of St. Peter's is twice its diameter, that of St. Paul's one and a half times its diameter.

The interior shows the effect of space — of strong masses, and of broad plain surfaces divided by elaborate architectural ornament. The interior coloring is a



whitish gray, relieved by lavish gilding on rich raised work in the high-arched ceiling. The monuments form worthy rivals to those in any church in the world — military heroes, painters, engineers, and scientific men.

The view from the golden gallery, a broad stone walk around the outside of the base of the cupola, is unique, extending as it does across the most enormous stretch of human habitations to be seen on earth.

The services held daily and three times on Sunday are impressive. There are special services for notable occasions. One of the most striking of them, held in June, is the annual meeting of the charity children of London who, to the number 3,500, are grouped in seats that rise in long slopes from the pavement to the arches above the aisles. The whites and scarlets of the girls' dresses are strongly contrasted with the black of the boys' clothing. Finally the many thousands on the floor unite with the children in the full service. "One can seldom feel such a thrill," says Hunnewell, "as is given by the simplicity and power of the children's singing with its precision, tone and freshness joined with that of the great congregation."

#### STORY AND ANECDOTE.

When St. Paul's was building, one of the board of directors insisted that it should have a spire. Wren drew a plan with a gorgeous spire on top of the dome, but never meant that it should be built. It still remains on paper.

Macaulay's imagination pictures a future time when some traveler from New Zealand should stand upon a

broken arch of London bridge and in the midst of a vast solitude sketch the ruins of St. Paul's.

In the year of the great plague in London, three hundred beds were placed in the church.

In the year 1600, the wonderful dancing horse, named Morocco, shod with silver shoes walked up one of the towers of St. Paul's.

It is the only Renaissance cathedral in England, and is the only cathedral in England that has a dome.

It is said that the cost of St. Paul's, about four million dollars, was paid by a tax on all the coal brought into London.

Upon the grave of Christopher Wren is the inscription, "Reader, if you would see my monument, look around you." In beginning the work Wren accidentally drew the dome and its dimensions upon a gravestone inscribed "Resurgam"—I shall rise again. This circumstance is commemorated in the cathedral itself by a stone over the pediment of the southern portal upon which is sculptured a Phoenix rising from the flames with the motto "Resurgam."

#### THE PARISH CHURCH.

One of the elements in the expression of beauty mentioned in the table on page 11 is that of associations. These may be historical or patriotic like those that cluster around Independence Hall in Philadelphia, or they may be personal. Memory often comes to the aid of architecture helping to make it seem beautiful. To many the village church with its peaceful cemetery is a sacred spot. Its stones are hallowed through as-

sociation. The wedding, the funeral, the Christmas tree, the Sunday-school class, and perhaps meetings outside the doors all mingle in our love for it.

In England many of the parish churches possess real architectural beauty. They are not rich and grand like the cathedrals but a small building may have a distinctive beauty of its own. In our own country many of the country churches are dignified and harmonize with the village street and the country landscape. Some of the early American spires were designed by Wren himself, and hundreds are more or less copied from them. "The greatness of Wren," says H. H. Bishop, "is as conclusively shown in St. Stephen's in Walbrook, as in St. Paul's Cathedral. His steeple in Bow church is almost as famous as his great dome."

#### ANECDOTES OF ENGLISH ARCHITECTS.

*William of Wykeham* (1324-1404) is noted as one of the earliest of British architects of whom we have a full history. He built many of the beautiful buildings of Windsor Castle, New College at Oxford, and worked on Winchester Cathedral and School.

The story is told of his work at Windsor, that, on one of the walls of the castle the king's attention was called to the words "Hoc fecit Wykeham." The king complained to the architect about this, to which Wykeham replied that the words were not intended to mean "Wykeham made this," but "This made Wykeham." His ready wit seems to have saved him from the displeasure of the king, who heaped many favors and preferments upon his head, and much affection.

*Inigo Jones* (1573–1652) was the son of a cloth-maker, and there is no certain account of the way he was brought up. We hear of some financial troubles of his father and of Inigo's being sent abroad by certain noblemen. In his own words he tells us something of these travels. "Being naturally inclined in my younger years to study the arts of design," he says, "I passed into foreign parts to converse with the great masters in Italy, where I applied myself to search out the ruins of those ancient buildings that yet remain."

Returning to England he entered the service of the King, James I, as "Surveyor of the Works." The palace of Whitehall in London is the great monument of his genius.

#### ANECDOTES OF SIR CHRISTOPHER WREN (1632–1723).

Sir Christopher Wren was a small and weakly child, but early showed a strong mind. Mathematics and astronomy were from the first his chosen pursuits. At the age of thirteen he invented an astronomical instrument which he dedicated to his father in Latin rhyme. At sixteen he could discuss questions of great depth in astronomy and pure mathematics. When twenty-six, he had an international reputation as astronomer, scientist, and inventor, before the source of his permanent reputation had even been guessed. He had, however, been preparing himself as an architect, and his abilities and ambitions were not unknown to King Charles II, who wished to restore St. Paul's Cathedral in London.

Later, Wren lost the favor of the king and was not able to bring the clergy to his ideas about St. Paul's.

During this delay Wren traveled in France studying and making many sketches, "bringing home," as one man put it, "the whole of France on paper." But what argument could not do, the hand of fate was to accomplish.

In 1666 a great fire destroyed the old cathedral beyond restoration, and enough more of London to open the way for extensive city-planning. The carelessness of the citizen who set the fire made it possible for Wren to build one of the noblest churches the world has ever known, and to plan a more splendid city than has ever been built before or since. That his splendid plans for the new city were never carried out except in small part was not his fault. The cathedral except for details was carried forward under his sole direction. He received £200 a year for his services. Of the other new churches rebuilt after the fire, he also planned and executed over fifty.

Wren had a large measure of tact, and the ability of impressing a sense of his talents upon all men he met with. He was a scholar in times when many of the rich and great were illiterate. He was a great student and a great worker.

In 1723 his busy life ended and with splendid ceremony he was laid beneath the mighty dome his genius had created. "*Non sibi, sed bono publico.*"

## AFTER THE RENAISSANCE

We have now examined the chief types of architecture. We need not, all at once, make up our minds which kind of architecture we like best. When we visit Egypt we may be greatly awed by the majestic size of her pyramids and temples. In Greece we must be made happy by the simple and perfect beauty of her temples. We may, for the time, "feel Greek," and know a quiet joy we had not felt before. As we look down the dim aisles of Milan Cathedral, or of Notre Dame, or gaze on the outward beauties of Reims, or Rouen, and other Gothic cathedrals, we may feel a sort of rapture or spiritual elevation, not like the inspiration of Greece or of Egypt. In Rome the Renaissance dome of St. Peter's, or the rich façades of the Florentine palaces may give us a glad surprise, while in Venice we may be entirely carried away by the oriental, almost barbaric, splendor of St. Mark's.

But, afterwards, as we go about our daily lives, remembering all these things, we shall probably find that one or the other of these great monuments has a greater hold upon our real selves than any of the rest. To one of them something in us will respond with an unflinching love and devotion. This will be an index to our character; and, if the response rings true, let us keep to our own choice. Let us emulate the freedom of the

Renaissance and be ourselves. For, whichever is our choice, we have doubtless chosen well. They are all noble and beautiful forms, worthy of all the love we can give them; and they are great precisely because they can inspire good thoughts in our minds, and fine feelings in our hearts.

Since the Renaissance there has been no new type. Indeed, as we saw, the Renaissance itself was a revival and making-over of classic style. So, instead of any distinctively new type of building, modern times have given us revivals — Greek revivals, and Gothic revivals chiefly.

Professor Hamlin has said: "Architects are learning that the important element is no longer the style-label on the details, but the inherent excellence of the composition; of its distribution of voids and solids, of light and shade, its proportions, masses, and outlines; and thus, freed from the bondage of a formula, they dress their compositions in whatever garment of details seems most appropriate." The Paris Opera House may be taken as an illustration of this.

Like the preceding styles, the Renaissance finally ran its course and degenerated into showiness, and over-ornamentation instead of strength, until people became tired of the vulgarity of the Rococo. By the middle of the eighteenth century (1750) it became evident that the vigor and power of the Renaissance was dead. The reaction was to go back to the simple Roman, copied in exact imitation of the old façades.

This Roman revival was succeeded (about 1800) by a Greek revival, especially in England and Germany.

There was a prolonged craze for Greek columns. The most famous buildings of the nineteenth century (and just previous) might be given as follows:

Bank of England London	By Sir John Sloane Greco-Roman
British Museum London	Robert Smirke Purely Greek With Ionic Colonnade
University of London St. George Hall Liverpool	Wilkins Greek Ionic
Old Museum Berlin	Fr. Schinkel With Greek Portico
New Museum Berlin	Stuhler
Court Theater Berlin	Schinkel Adapted Greek
Parliament House Vienna	
Pantheon Paris	Close copy of Roman- Corinthian with dome
Arch Arc de l'Etoile	
Church of the Madeleine	Roman-Corinthian
Bourse Paris	Roman
Palais de Justice Paris	Neo-Greek



Louvre completed and  
united by new  
pavilions

Visconti  
Lefuel

New Opera of Paris

Garnier

Dresden Theater

Semper

Houses of Parliament  
London

Victorian Gothic

About 1850 came a Gothic revival in France, but it produced no famous buildings. Under Napoleon III

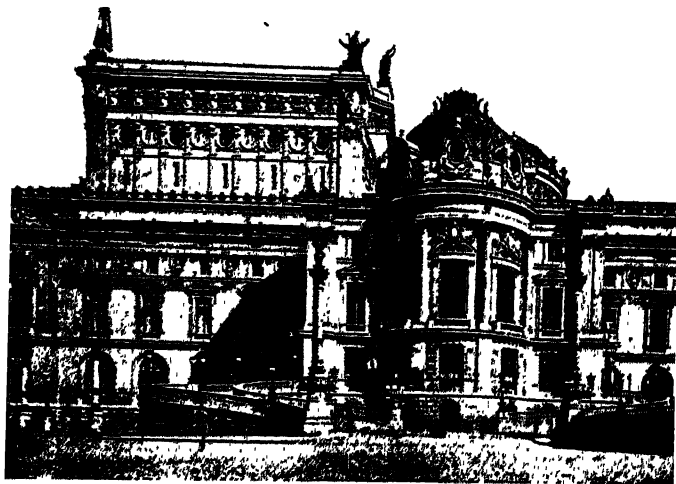


Fig. 85. A side view of the Paris Opera House.

the Louvre was completed with great skill and taste. The Pavilion of Richelieu, by Visconte Lefuel, and the remodeling of the Pavilion de Flore and de Marsan, are in this style.

One of the most famous buildings of the world, the

New Opera House of Paris, by Garnier (1863-75), ranks as a great national monument.

The greatest of architecture after the Renaissance depends rather upon its *adaptation to use* and *skilful planning*, than upon the borrowing of the details of classic styles. Expression of character and refinement in detail also characterize the best of it.

## FAMOUS BUILDINGS IN AMERICA

### THE ARCHITECTURE OF THE HOME.

This is sometimes called domestic architecture, to distinguish it from civil architecture such as public buildings, or from ecclesiastical architecture such as churches, or from military architecture such as forts. Domestic



Fig. 86. Mount Vernon, the home of Washington.

architecture is of great importance to a people, and it will be worth our while to consider how it began.

Something to eat and a shelter to sleep in are man's first needs. Wild men of the fields and woods look for a cave, they dig holes in banks, or they climb into trees. When enough of such places cannot be found, or better homes are required, they make tents of skins,

or huts of branches. Sometimes, to be safer, they build these huts on piles and over water. Such people are called Lake Dwellers, and remains of their villages are found in what is now Switzerland. Those who live in holes under the rocks are called Cave Dwellers, and remains of ancient homes of this sort are found in many parts of the world, because rude peoples, having like needs and the same chances, will think of doing the same things.

Those people, whose wealth is in herds of cattle and flocks of sheep and goats will chose to dwell in tents, that they may easily take their homes with their animals, when, because of hunger, there must be a removal to new pastures. These people are called nomadic, or wandering tribes.

Families who live by farming need to dwell most of the time in one place. They will think of making larger and more lasting houses of the materials most easily and cheaply to be had. A village will be formed; a church, a public hall, a market, and a school will be needed, each so constructed as to be good for its special use. The village, if well placed, will grow into a town, and at last become a city.

The home of to-day, our kind of home, with its comforts and associations, is the product of civilization, although in America there were true homes even in the wilderness.

Figure 87 is a log cabin not unlike one in which a great President of the United States was born. If we consider this simple structure we shall see that it had many of the elements of good architecture. It was

fit. It was convenient for practical use, and it was suited to its surroundings; its construction and arrangement were exactly adapted to the needs of its occupants. It was well-lighted, and well-ventilated. It was strong:

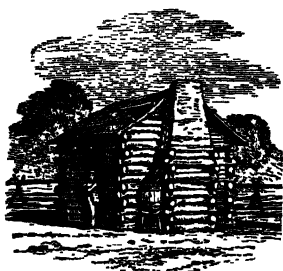


Fig. 87. Log cabin.

the logs were cut and fitted, and could withstand storm and stress, wind and rain, and attacks by Indians. Patched with mud and papered within, even the cold could scarcely penetrate. It was beautiful: its color soon harmonized with the landscape; its few ornaments

were sensible. It expressed itself and its owner. Every home should do that.

Nearly every one becomes personally interested in architecture at some time in his life. Perhaps this will come to him just after he has seen some beautiful building that greatly impresses him. But it will surely come when he builds or alters his own home, and, if he is a reasonable, sensible man, he will want a reasonable, sensible home. If he is pretentious and vain himself he will probably reveal it all the more clearly by the kind of home he puts up. One thing we should make sure of, namely, that the home shall be convenient — do its duty well. It should also do it in a graceful, pleasing way. A man will not become an architect by building his home, nor by reading books, but he will learn to appreciate more of what he sees. There is an old saying: "By dint of hammering you become a blacksmith."

## MOUNT VERNON.

Mount Vernon is a place of great interest to all Americans, for it was the home of George Washington. It was an ideal country home in its time, and it speaks of comfort and peace to all who visit it to-day. Washington wrote to Lafayette: "I have become a private citizen on the banks of the Potomac, and under the shadow of my vine and fig-tree. I am solacing myself with tranquil enjoyments." The scene is one of great natural beauty, with the noble river, the hills and the valleys and deep woods, the park of deer—all the fit abode for a noble mind. Here the Washingtons lived, and dispensed a quiet, warm-hearted hospitality.

—It was built for comfort and convenience, somewhat reminding us of Longfellow's description of the Wayside Inn, which was:

Built in the old Colonial day,  
When men lived in a grander way,  
With ampler hospitality.

The place is admirably preserved, mostly in its original state; and to visit it is to bring back the times of long ago. But, although the arrangements seem simple to us, we are impressed by their convenience and suitability.

The plan of the estate is important, with its forecourt surrounded by kitchens, work-shops, and offices, the mansion itself opening toward the view. The public, the private, and the service portions were kept carefully distinct. Notice the tall portico, and the arcade con-

necting the detached building. One of these was the kitchen where to-day we may see the candle-mold, the warming pans, the great andirons and pots, and many kinds of household implements that have since been superseded by newer inventions. Another building held the spinning and weaving machinery; another the family coach; and so on. How independent was the farmer of those days! He had everything necessary right at home.

I suppose we should call the architecture Colonial, and the style, which we call Colonial, is a sort of simplified Renaissance. It is often called Georgian because it flourished in England during the reign of the Georges.

#### THE CAPITOL AT WASHINGTON.

We have seen that throughout Europe, although there were periods of extensive building, no new type came



Fig. 88. United States Capitol at Washington, D. C.

into being after the fifteenth century, but instead revivals of the classic and Gothic.

The capitol at Washington, which is so familiar to all Americans, is in the style of classic revival. The type of this great building has been adopted widely for smaller public buildings and so it has had a great influence on our ideas

of buildings of this class. The style is called, more precisely, the neo-Roman or the New Roman. Figure 87 shows a part of the capitol. We notice that it is marked by a free use of columns in porticoes with much detail taken from ancient Roman buildings.

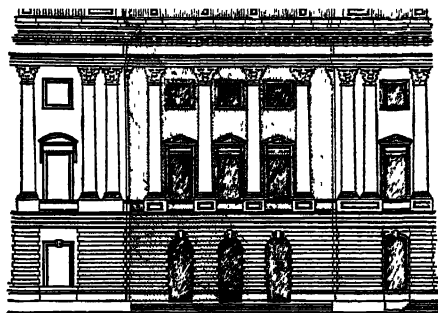


Fig. 89. Neo-Roman architecture. From the Capitol at Washington.

Of this same style, though quite dissimilar in appearance, is the great new terminal of the Pennsylvania Station in New York. It is a sort of American Renaissance. Skilful planning, and adaptation to use, are its best features.

We all know that many of our older public buildings are horrible examples. Some one has said that the greatest difficulty with which American architects have to contend is public indifference. But now that all seems to be changing, and the people as a whole now take a deep interest in having their public buildings erected in a worthy manner, and in having their architecture beautiful and fit.



## THE WOOLWORTH BUILDING.

The peculiar conditions of American business have given us a new type of architecture known as the sky-

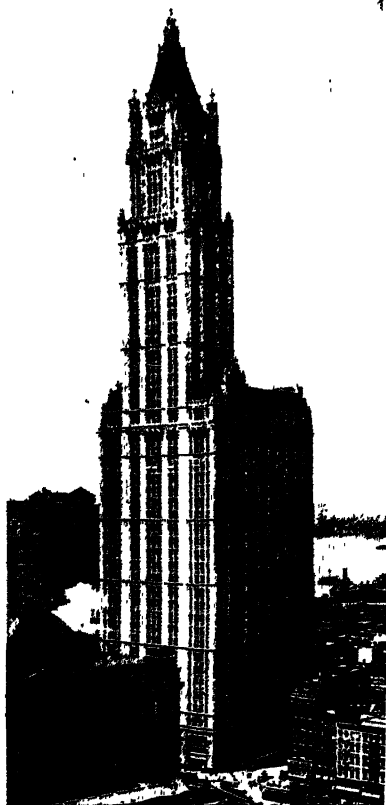


Fig. 90. The Woolworth Building,  
New York.

scraper. It is a distinct type as much as those of the Middle Ages, although its ornamental features are usually borrowed from wherever the architect finds it convenient, or thinks it suitable to borrow. They may be Gothic, or Romanesque, or Renaissance, or pure Greek. The modern architect considers the situation and purpose of the building, and commonsense and good taste tell him how he should build.

In structure the skyscraper must be a building of steel frame. Its exterior appearance may be inappropriate and ugly, as sometimes happens; or it may be suitable and beautiful.

The Woolworth Building is an example of the suitable

ble and beautiful kind, and it thrills the beholder as few other buildings can do. Its chief beauty is its tall tower. Its color of creamy whiteness, with roofs of green and gold, greatly helps its lace-like lightness, and the whole effect is one of inspiration and pleasure.

The skyscraper is no exception to the truth that architecture tells the story of a people. It does not contain writings and sculptured pictures like the Egyptian temples, but, if the people of future ages dig up our skyscrapers, they will need no writings to proclaim how ingenious and convenient were our contrivances, or how great was our hurry. We would show plainly, too, that one man or combination of men could shut off the light from his neighbors, and that one man lived like a king where thousands existed in crowded squalor.

## SOME AMERICAN ARCHITECTS.

### THOMAS JEFFERSON AS AN ARCHITECT (1743-1826).

"Architecture is worth great attention, since it shows so much," wrote Thomas Jefferson, the author of the Declaration of Independence.

Jefferson was a great lover and a great student of architecture. "How," he asked Madison, "is public taste in this beautiful art to be cultivated in our countrymen unless we present to them, on every occasion when public buildings are to be erected, models for study and imitation?"

Jefferson's studies were so thorough and well grounded that he is worthy of ranking as the earliest of the great American architects. His first important

work was his own home, Monticello, begun in 1770, long before trained men were at work. Architects of to-day, who have had the long training which an architect must have, wonder where Jefferson got the technical knowledge and skill which a study of his home reveals. We know that he owned Palladio's treatise on the Five Orders, and that he followed Palladio's ideas.

His most important work was the University of Virginia, which was the product of his mind alone. It is a great architectural success, and architects can understand the great amount of labor he put upon it. His plans and notes for this undertaking are still in existence, and it is marvelous to see how meager they are compared with what an architect to-day would have to put on paper before turning over his work to the actual builders. We are told that Jefferson actually trained the stone and brick workers and the carpenters.

CHARLES BULFINCH (1796-1867).

"If the artist, who fashions a great statue, or who paints a great picture, leave behind him an enviable fame and a fragrant memory, surely the men who have helped fashion and adorn a great city, who have laid its foundations and builded its walls, who have given it its character, and guided the currents of its history, who have made Boston, Boston, and Worcester, Worcester, have a far greater title to grateful remembrance," writes Senator George F. Hoar in speaking of Charles Bulfinch, the American architect.

Charles Bulfinch was born in Boston in 1763. He tells us that he would have become a doctor like his

father, but that his father was averse to it. He entered a counting-room of a friend and, owing to the unsettled state of business, had much leisure time. The attending to some building on the estate of one of the partners of the firm helped to interest him in architecture. The death of a relative in England brought a thousand dollar bequest, and his parents devoted it to a trip abroad for Charles. He writes of this tour: "I was delighted in observing the numerous objects and beauties of nature and art that I met with on all sides, particularly the wonders of architecture."

The completion of the capitol at Washington was his most important work, and the state house in Boston one of his best known. He did many public buildings and entire streets, such as Park Place, in Boston.

#### HENRY H. RICHARDSON (1838-1886).

Henry Hobson Richardson was born in Louisiana in 1838. Soon after his graduation from Harvard College his stepfather sent him abroad to prosecute his architectural studies. He spent a summer traveling in England, Scotland, and Ireland, and then settled down to his work in Paris. The great Paris art school, especially for architects, then as now, was the *École des Beaux Arts*. He writes home about his admission there: "The examinations lasted one month and were carried on entirely in French. I was sick, but nevertheless I was eighteenth of sixty accepted out of a hundred and twenty-five who tried."

During the course of his studies he wrote many letters that have been preserved. In one he says: "My

poor country is overrun with poor architects. I will never practise till I feel I can do justice to my art."

Trinity Church, Boston, and the capitol at Albany and the jail of Pittsburg are three of his most important works, but town halls and libraries and other public buildings in many cities spread his influence all over America. Many beautiful private dwellings came from his hand.

## ORIENTAL ARCHITECTURE

The styles of architecture we have been examining have a definite relation to each other, one growing out of another, but the great oriental countries like China, Japan, and India have their own styles which have nothing to do with those we have studied; and we have left a brief mention of them until the very last.

In India there are many great buildings so wonderfully constructed, carved, and decorated as to have become truly famous. The styles are usually designated according to the three great religions of India: the Buddhist, the Jain, and the Brahman or Hindu. They all have traits in common and, as we may note in the cuts, they present an appearance of similarity. In contrast to our own ideas, they do not follow the lines of structure in their decoration. Ornament is profuse and rich and sometimes covers all parts of the buildings. Sculpture is freely used, and the interiors show multitudes of columns adorning halls and corridors. The materials are usually sand-stone or brick, and nearly all the great buildings are religious — temples, shrines, and monasteries.

We have seen (page 92) how Mohammedan architecture came into India during the period from the eleventh to the fourteenth centuries, but even previous to that there was a fully developed style of architecture in India.

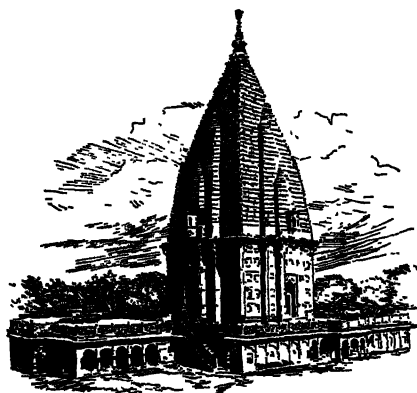


Fig. 91. Sanskrit architecture. Suramastika Temple, Benares, India.

Its rise and growth are a mystery. It seems to have sprung from the soil, and to have borrowed nothing from the rest of the world. In the first cut we have an example of the temple at Benares, India. This is in the ancient style, known as Sanskrit, from which the Jain style developed.

The leading characteristic of the Sanskrit style is the tower-like shape of the temples, with square plan and base, the upper part curving inwards.

The next cut shows the developed Jain architecture in the Temple at Kali, Katraha, India. The domes built in horizontal courses of pointed section, are a feature. The domes usually rest upon eight pillars, arranged octagonally,

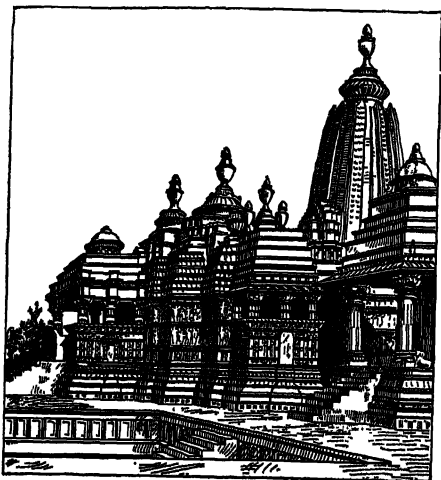


Fig. 92. Temple at Kali Katraha, India.

with four more pillars at the corners completing a square in plan. The central figure in a Jain temple is a cell lighted from the door, and containing a cross-legged figure of one of the deified saints of the sect. Notice the rich carving of the exterior. Jain architecture is still practised in India. It began about the same time as Buddhist architecture and developed with it after about A.D. 450. They are closely akin to each other in many respects.

In the cut, Figure 93, we have a temple of another style. It is the great Pagoda, Tanjore, Southern India. Such towers were originally raised over relics of Buddha, the bones of a saint, or some other sacred objects. Nowadays they are sometimes built chiefly as a work of merit on the part of some pious person, or in the belief that they will improve the fortunes of the neighborhood. The rich carving and painting are noteworthy features and the form is usually pyramidal

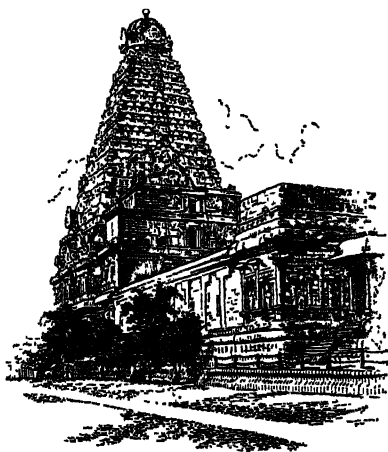


Fig. 93. Great Pagoda, Tanjore, Southern India.

Chinese and Japanese are the other chief branches of Oriental art; but their buildings, being largely of wood, are not of great importance to the history of architecture. This use of wood is partly due



to the prevalence of earthquakes. They are cleverly decorated. The cut (Fig. 94) is a characteristic example



Fig. 94. The Fuhkien Temple, Ningpo, China.

of Chinese art. The roofs are usually tiled, and have a hollow dip as if copied from a tent. Glazed tiling of various colors is a feature. A peculiarity of Chinese building is that they begin with the roof which is supported on posts. After this is furnished they build the walls under it.

## LIST OF PROPER NAMES

### Pronounced and Defined, with Page Index

- Acropolis. A general name for the citadel of a Greek city, but especially used for that at Athens, where it is a precipitous rock about 260 feet above the city and about 1000 x 400 feet in size. Pages 37 and 44.
- Alberti (äl-bär'-tē) Leone Battista. A noted Italian poet, musician, painter, sculptor, and architect. Born at Florence 1404. Died at Rome 1472. See pages 175, 178 and 179.
- Alhambra (al-ham'-brä). A great citadel and palace, founded in the 13th century above the city of Granada, Spain, by the Moorish Kings. See pages 16, 85, 87, 89-91.
- Amiens (ä-mē-an'). A leading commercial city in France. The cathedral begun in 1220 is in purity and majesty of design one of the finest of medieval structures. Much damaged in the war in 1814. See pages 95, 155, 156.
- Apollinare in Classe (ä-pol-lē-nä-re in cläs'-se). A church in Ravenna, Italy, begun in 534. It is the most important existing early-Christian basilica in Italy. See page 75.
- Arc de l'Etoile (ärk dé lä-twäl'). A triumphal arch in Paris the largest in existence. Begun in 1806 by Napoleon, but not finished until 1836. The structure is 146 feet wide and 160 high and 72 feet deep. See page 203.
- Arch of Constantine. A triumphal arch built in Rome in 312 A.D. See description on pages 67, 68 and 69.
- Arch of Titus. A triumphal arch built in Rome to commemorate the taking of Jerusalem. See description on pages 69 and 70.
- Arles (ärl'). A French city, sometimes called the French Rome because of its many antiquities. These include an amphitheater, a palace, an obelisk and so forth.
- Arno (är'-no). A river in Italy about 140 miles long, on which are situated both Pisa and Florence.
- Athene (a-thē'-nē). In Greek mythology, the goddess of wisdom. The same as the Roman Minerva. See pages 33 and 44.
- Athens (ath'-enz). The capital and largest city of Greece. See pages 37, 43.
- Avignon (ä-vën-yôn'). A city of France.
- Beauvais (bō-vā'). A city in France, 43 miles N. W. of Paris. Its cathedral is noted for its superb glass and the vaulting and tracery of its choir. See mention on page 123.

Benares (be-nā'-rez). A city of India. See illustration page 218.  
 Beni-Hassan (bā'-na-hās'-an). A village of Egypt, famous for its rock-tombs. Page 28 and picture page 30.

Bernini (ber-nē-nē), Giovanni Lorenzo. Born at Naples 1598, died at Rome 1680. At one time architect of St. Peters. Made designs for the east front of the Louvre. See page 175.

Boboli (bō'-bō-lē) Gardens. These are in the rear of the Pitti Palace in Florence. Open to the public and filled with grottoes and fountains. See pages 171, 172.

Bologna (bō-lōn'-yā). Capital city of a province in Italy. Population 165,000.

Bramante (brā-man'-te) Donato d'Angnolo. Born 1444, died 1514. Celebrated Italian architect and one of the designers of St. Peters. See pages 167, 175, 179, 180, 181.

Bruges (brō'-jez). A city in Belgium.

Brunelleschi (brō-nel-les'-kē) Filippo. Born in Florence 1379, died 1446. Noted Italian architect. See anecdotes pages 159, 167, 170, 171, 172.

Buddha (bu'-da). The founder of Buddhism, a religion of Ceylon, China and Japan, numbering more than 350,000,000 adherents.

Byzantine (biz'-an-tin or bi-zan'-tin). A style of architecture. See pages 13, 14, 77-83, 87.

Caen (kān). A city in France. Seat of a fine Romanesque cathedral.

Campo Santo (kān'-po sän'-tō). A cemetery (sacred field). That at Pisa begun in 1278 being notable. See pages 100, 107.

Chambord (shon'-bor'). A village in France which contains a famous château illustrating Renaissance architecture.

Cheops (kē-ops). See pages 23, 24, 91.

Chichester (chich'-es-ter). A city in England containing a noted cathedral, chiefly of Norman style.

Cologne (kō-lōn'). The largest city of the Rhine province of Germany. Its cathedral begun in 1248 was only completed in 1880. See description pages 117, 123, 148, 154, 155.

Colosseum (kol-o-sē'-um), or Flavian amphitheater, in Rome. See description pages 50, 57-60.

Dijon (dē-zhōn'). A city in France. Noted for its fine, but not large, cathedral. See page 123.

Doges Palace (dō'-jez). See description pages 81, 98, 183-187.

Domitian (dō-mish'-ian). The name of a Roman Emperor born A. D. 51.

Drachenfels (dräch'-en-felz). A steep mountain on the Rhine. In a cave here lived the dragon slain by Siegfried. See page 114.

Edfu (ed'-fō) or Edfou. A town in upper Egypt situated on the bank of the Nile. Its temple is the finest existing example of an Egyptian religious edifice. See pages 16, 21, 27.

Erechtheum (ē-rek-the'-um). An Ionic temple at Athens. See pages 16, 37, 40, 46, 47.

**Etruscans** (ē-trus'-kanz) or **Etrurians**. A people of Northern Italy. See page 54.

**Flavian**. Referring to the Roman Emperors of the house of Flavius, namely: Vespasian, Titus and Domitian.

**Fontainebleau** (fôn-tân-blō'). Town in France and palace of the same name. This palace, long the residence of French Kings displays the styles of Renaissance architecture. See page 188.

**Garnier, Charles G. T.** (gār-nyā'). A French architect who designed the Paris Opera House, which was erected under his supervision 1863-74. See page 192.

**Ghibellines** (gib'-e-linz). The imperial and aristocratic party in Italy in the Middle Ages. See page 95.

**Ghiberti** (gē-ber'-tē) Lorenzo. See pages 167, 168.

**Giotto** (jot'-tō). Celebrated Italian painter, architect and sculptor. See pages 97, 150, 151, 152.

**Gobelin** (gob-lan'). A French family who introduced the manufacture of tapestries in the 15th century.

**Gothic** (goth'-ik). Language of the Goths, an ancient race of the 3rd century. See pages, 15, 17, 18, 19, 48, 72, 78, 91, 97, 99, 116, 123-156, 157, 162, 166.

**Granada** (gra-nā'-dā). A kingdom or province in Spain and its capital. See page 85.

**Guelfs** (or **Guelphs**) (gwelfs). The Papal and popular party in Italy in the Middle Ages. See page 95.

**Haddon Hall**. Situated two miles S. E. of Bakewell, Derbyshire, England. A notable example of medieval residence of a great English landed proprietor.

**Hadrian**. Roman Emperor 76-138 A.D. A patron of the arts and a great builder.

**Hampton Court**. A royal palace on the Thames near London. Battlemented Tudor buildings. Built 1515-1535. The modern part added by Wren in Renaissance style.

**Hindus** (hin'-dōz). The native race in India.

**Homer**. The Greek poet to whom is assigned the authorship of the Iliad and the Odyssey. See page 48.

**Ictinus** (ik-tī'-nus). A Greek architect who lived in the middle of the 5th century B. C. and was chief designer of the Parthenon. See pages 16, 42, 43.

**Ionic**. See glossary and pages 34, 37, 47, 56, 58.

**Jain** (jin). Pertaining to the Jains, a Hindu sect.

**Jones, Inigo**. See pages 19, 193, 199.

**Kali** (kā'-lē). The name of a Hindu temple and divinity. See page 218.

**Karnak** (kār'-nac). A village in Egypt on the eastern bank of the Nile, on the site of Thebes, famous for ruins of antiquity. See pages 16, 21, 27, 28, 29.

**Khufu (kō'-fō).** An Egyptian King, builder of the great pyramid.

**Lido (lē'-do).**

**Louvre (lōvr).** A palace in Paris. See pages 189-191.

**Lucca (lōk'-kā).** A province in Italy.

**Luxor (luk'-sōr).** A village in Upper Egypt, on part of the site of ancient Thebes. See pages 16, 21.

**Madeline (mäd-län').** A church in Paris of the Roman-Corinthian style. See page 203.

**Magna Charta (mag'-nä kär'-ta).** The great charter of the liberties of England granted by King John in 1215 used as a date or epoch in history.

**Maison Carrée (mä-zôn kä-rä').** An ancient building at Nimes, France, with Corinthian columns. See page 59.

**Mayence (mä-yōis').** A city on the Rhine in Germany. Also spelled Mainz (mīntz).

**Medici (med'-ē-chē).** An Italian family which formerly ruled in Florence. See page 160.

**Michelangelo (mī-kel-an'-je-lō).** A famous Italian painter, sculptor and architect. See pages 108, 159, 160, 169, 181, 182.

**Michelozzo (mē-ke-lō'-so).** An eminent sculptor and architect. See page 173.

**Milan (mē-lan').** The second city in size in Italy noted for its great cathedral begun in 1387. See pages 156, 179, 201.

**Mohammed (mō-ham'-ed) 570-632.** The founder of the Mohammedan religion. See pages 15, 16, 85, 217.

**Monticello (mon-tē-sel'-lo).** The mansion and estate of Thomas Jefferson in the State of Virginia. See pages 213, 214.

**Moslems (moz'-lemz).** The followers of Mohammed. See page 85.

**Nimes (nēm).** A city of France. See page 59.

**Notre Dame (nō'-tr dām).** A cathedral at Paris. See pages 17, 122, 136-143.

**Palladio (pāl-lā'-dē-ō) Andrea.** A celebrated Italian architect. See pages 187, 188.

**Palazzo Vecchio (pā-lāt'-sō vek'-kē-ō).** A palace in Florence, Italy. See page 171.

**Pantheon (pan'-thē-ōn).** A building at Rome. See pages 49, 54, 62-67.

**Parthenon (pār'-thē-non).** A temple at Athens, Greece. See pages 16, 31, 33, 34, 38, 42-46.

**Pepys (pēps or pips or peps) Samuel.** An English politician whose diary is one of the famous books of the world.

**Pericles (per'-i-klēz).** An Athenian statesman. See pages 16, 32, 48.

**Perrault (pā-rō') Claude.** A French architect. See page 190.

**Pincian (pin'-shi-an).** A hill in the northern part of Rome.

**Place de la Concorde (plās-dē-lā kōn-kord').** A noted square in Paris.

- Pompeii (pom-pa'-ye). An ancient city of Italy.
- Ponte Vecchio (pon'-te vek'-kē-o). Meaning "old bridge." See page 170.
- Pozzuoli (pot-sō'-ō-lē). A seaport in Italy.
- Rainaldo (rā-nāl'-do). See page 101.
- Raphael (rā'-fā-el). A great Italian painter and architect. See pages 66, 159, 180, 182, 183.
- Reims (or Rheims) (Rēmz). A city in France. See page 201.
- Renaissance (re-nā-sons'). A period in history and the name of an architectural style. See pages 157-200.
- Rouen (rō-ōn'). A city in France. See pages 123, 131, 165, 201.
- Rue Royal (rū rwā-yal'). A street in Paris.
- Sainte Chappelle (sant-shā-pel'). A chapel in Paris. See page 193.
- Sancta Sophia (or Sofia) (sō-fē-ā). See pages 77 and 78.
- Santa Croce (krō'-che). See page 153.
- Seville (sev'-il or se-vil'). See page 17.
- de Sully (sul'-i). See page 17, 143.
- Symonds (sim'-ondz) John Addington. An English man of letters.
- Taj Mahal (tāzh-ma-hāl'). A building in India. See pages 91, 92.
- Tangier (tān-jēr'). A seaport of Morocco. See page 87.
- Tanjore (tan-jōr'). A state in India. See page 219.
- Thebes (thēbz). A city of ancient Egypt situated on the Nile. See page 29.
- Vasari (vā-sā'-rē) Giorgio. An Italian painter and writer on art whose "Lives" is one of the world's famous books. See pages 167, 169, 170, 173, 182.
- Versailles (vēr-sālz). A city about ten miles from Paris noted for its famous palace and gardens.
- Vezelay (vāz-lā'). A town in France. See pages 107, 109.
- Vicenza (vē-chent'-zā). A town in Italy.
- Viollet-le-Duc (vyō-lā'-lē dük'). A French architect and writer, famous for his dictionary of architecture. See page 192.
- Vischer (fish'-er). See page 19 (table).



## GLOSSARY OF TERMS USED IN ARCHITECTURE

### With Many Page References.

- Abacus.** The slab forming the topmost feature of a Greek or Roman capital.
- Abbey.** The buildings of a monastery, or convent.
- Acanthus.** In botany, a tall plant which grows in southern Europe. In architecture a characteristic ornament derived from, and resembling the leaves of the acanthus. See pages 48, 134.
- Adobe (a-dō'-bi).** Clay or soil from which sun-dried bricks are made in countries of little rain. Also the name given to the small huts or houses made of these bricks, as "adobe houses." See page 3.
- Aisle (il).** Usually merely a passageway giving access to seats; but in architecture a lateral sub-division of a church parallel to the nave, choir, or transept, from which it is divided by piers or columns. See pages 72, 101, 102, 172.
- Ambo.** A rostrum or pulpit.
- Amphitheater.** An oval or circular building with seats rising above and behind each other around a central or open space. In architecture applied to ancient edifices of this description devoted to contests. See page 61.
- Antæ.** Columns or pilasters built in masonry.
- Apse (äps).** A recess, semicircular in form, covered with semicircular arched roof; — or in general, any semicircular termination in a church usually behind the choir. See pages 72, 141.
- Aqueduct.** A channel for conducting water from one place to another, more particularly structures of masonry for conducting water to large cities as shown in the picture on page 52.
- Arabesque.** A decorative design of an intricate interlaced character; characteristic of Saracenic or eastern architecture. See description and illustrations, pages 16, 86.
- Arcade.** A series of arches, or a long arched passageway. See illustration on page 100 showing arcade around a cloister.
- Arch.** A structure made up of wedge-shaped solids to support weight above an opening. See illustrations and descriptions, pages 52 and 53.
- Architrave.** The stone laid on the top of the columns in a classic building to support the roof-front. Also the molding around a door or window opening, or arch. See pages 35, 36.
- Arena.** The inclosed space in the central part of a Roman amphitheater. See pages 58, 80.



- Atrium.** Usually an entrance hall. In early Christian buildings, a hall or court at the entrance to the building. See page 72.
- Auditorium.** The space or room allotted to the hearers or audience.
- Balance.** Harmonious arrangement or adjustment: just proportion, especially in the arts of design. See pages 24, 129.
- Balcony.** A platform projecting from the wall of a building and surrounded by a railing.
- Balustrade.** An ornamental railing.
- Baptistery.** A building, or portion of building, in which is administered the rite of baptism. See pages 100, 103, 108, 110, 166.
- Baroque.** The name applied to a style of architecture which flourished in the 18th century. Distinguished for its ornate forms and meaningless scroll work.
- Barrel vault.** A stone or brick roof, built as a continuous arch, either semicircular or pointed.
- Base.** The block used for the support of a column. Its object is to distribute the weight of the column.
- Basilica Church.** The name given to the type of early Christian church having three or five aisles and an apse at one end. See pages 71-75, 77, 99, 101.
- Battlement.** An indented wall of a fort or city. The indentations are called embrasures. See page 113.
- Bay.** A compartment in a structure separated from the remainder by an arch, buttress or vaulting. In a church, the space between one column and the next in a nave, is a bay.
- Beam.** A horizontal piece bridging over a space underneath. See pages 14, 21, 71.
- Belfry.** That part of a steeple or other structure from which a bell is hung. See about bell-towers, pages 97, 98, 104.
- Bell-tower.** A tower built to contain bells.
- Boss.** A small projecting block of stone, commonly carved into a foliage design: Gothic.
- Bourse.** A stock exchange, especially the one at Paris, France. See page 203.
- Buttress.** A large projection from the face of a wall built to resist outward pressure: Gothic. See pages 17, 126, 128, 129, 130, 138, 145.
- Campanile.** A bell-tower. Especially in Italy, a detached tower built to contain church bells. These bell-towers did not diminish towards the top, and the openings in the sides usually increased towards the top.
- Capital.** The head or crown of a column. See pages 35, 37, 38, 78, 96, 145.
- Caryatids.** Female figures used as supports, instead of columns. See illustration, page 46.
- Casement.** A frame for glass forming a window, or part of a window.
- Casing.** The framework around a door or window.
- Castellated.** Furnished with turrets and battlements like a castle.

- Cella.** The inner portion of a Greek temple, inclosed in solid walls.  
See pages 33, 43.
- Channels.** Shallow curved furrows running vertically along a column separated from each other only by a sharp edge.
- Château** (sha-tō'). A large stately residence usually in the country.  
Chiefly with reference to France.
- Chevron.** A variety of ornament common in Romanesque architecture. Zig-zag molding. See page 147.
- Choir.** The part of a church occupied by the singers.
- Citadel.** A fortress or castle near a city, usually for defense. Any strongly fortified place.
- Classic.** Having the characteristics of ancient Greece or Rome, especially their literature and art. See pages 35, 125.
- Clerestory** (klēr-stō-ri). Upper portion of a church with windows on both sides, immediately over the nave and rising above the aisles. (Clear-story.) See pages 16, 73, 102, 132.
- Cloister.** An arched way or covered walk. See description on pages 99, 100.
- Colonnade.** A series of columns placed at certain intervals. See pages 105, 176, 190.
- Column.** A cylindrical body or shaft standing vertically. See descriptions and illustrations, pages 21, 26, 35, 53, 59, 64, 73, 75, 79, 96, 102, 103, 110, 172.
- Composite.** A Roman order. See page 56.
- Concrete.** An artificial stone. See page 47.
- Corinthian.** A Roman order. See pages 34, 38, 47, 56, 58, 69.
- Cornice.** Horizontal moldings at the top of a building or room.  
Also, in classic architecture the upper portion of the entablature.  
See pages 35, 36, 164, 172.
- Corbel.** A stone fixed into a wall but projecting from it in order to support a weight above. Common in Gothic and usually carved.
- Corona.** A molding forming part of a cornice, the under side of which is grooved so as to throw off rain.
- Court-yard.** A court, or open space surrounded by, or attached to, a house. See pages 84, 89, 90, 115, 117, 189.
- Crossing.** Name given to the central space at the intersection of the nave and transept.
- Crypt.** Originally a cloister; now used to denote a subterranean chamber, usually vaulted, beneath a church.
- Cupola.** A small dome-covered structure rising above the main part of a building.
- Dais** (dā'-is). A platform or raised floor at one end or one side of a reception room or hall upon which seats are placed for distinguished persons, especially such a platform covered with a canopy.
- Dome.** A great arched roof surmounting a building. See descriptions and illustrations, pages 16, 65, 77, 78, 82, 92, 102, 166, 168.
- Doric.** A Roman order. See pages 28, 30, 34, 36, 37, 41, 42, 43, 45, 56, 58.
- Drawbridge.** A bridge which may be drawn up or let down as

before the gate of a town or castle or over a river. See page 115.

**Drum.** The circular wall on which a dome is raised.

**Dungeon.** The principal tower of a medieval castle. The underground part used as a prison.

**Duomo.** A cathedral; properly an Italian domed cathedral.

**Echinus.** A carved ornamentation of the ovolo, or rounded molding beneath the abacus.

**Elevation.** A drawing showing one face of an object, usually a building, only.

**Embrasure.** The enlargement of the aperture of a door or window on the inside of the wall. Also in a fort the opening in a wall or parapet through which guns are pointed. Also the indent at the top of a battlement.

**Engaged column.** A column built into a wall so as to appear as though a part of it were concealed. See descriptions and pictures, pages 18, 59, 161.

**Entablature.** In classic architecture the whole super-structure resting on the columns. See pages 35, 36, 58, 67.

**Entasis.** The outward curvature of a column. See pages 38, 39.

**Façade.** The principal front of a building, especially an important one.

**Fillet.** A small round or angular molding separating two other larger and more prominent ones, used to denote the upright bands between the flutings of a column.

**Flamboyant.** A style of architectural ornament peculiar to France in the 15th century—derived from the curved flamelike moldings.

**Fluting.** The vertical channeling of a classic column.

**Flying buttress.** An arched buttress reaching from the wall to another buttress outside the building. See page 129.

**Frieze.** A long band, usually decorated, immediately above the architrave and cornice. See pages 35, 36, 43, 44.

**Gable.** The triangular space of wall inclosed at the ends of a building by the pitched roof.

**Gargoyle.** A spout projecting from the gutter of a building, or connected with it by an opening, for carrying off water. See page 133.

**Groin.** The edge formed by the junction of two surfaces of a vault.

**Guild, or Gild.** An association for the promotion of common interests, especially those in the Middle Ages. See page 124.

**Hypostyle.** Applied to an arrangement of pillars, of which the two central rows are higher than those at the sides: the object being, as in the case of a Gothic clerestory, to throw a better light into the interior.

**Iglloo (ig'-loo).** The dome-shaped hut of the Eskimo usually built of hard blocks of snow. See page 3.

**Ionic.** A Greek order. See pages 34, 37, 47, 56, 58.

**Jamb.** The sides of a door or window opening.

**Joists.** Horizontal pieces deeper than their thickness, placed in parallel lines from wall to wall, or from beam to beam, to carry a floor.

**Keep.** The stronghold or citadel of a medieval castle. It was the strongest tower and final defense. Also called dungeon. See chapter on the castle.

**Keystone.** The central stone at the top of an arch.

**Lattice.** Anything made or covered with interwoven strips; specifically a window blind made of crossed strips.

**Lancet window.** A narrow pointed window named from its shape.

**Lantern.** The small structure topping a dome or tower—not a cupola. See page 168.

**Lintel.** A beam of any substance forming the top of a door or window, to carry the wall above. See pages 9, 14, 15, 21, 39.

**Lunette.** A small aperture or window especially if curved or circular in a roof. Also a work of art of such a shape as to fill a lunette.

**Loggia.** An open gallery with colonnade. Usually, but not necessarily, in the upper story of a building.

**Masonry.** The work produced by a mason; a construction of stones fitted together with mortar.

**Mass.** Bulk in general. See pages 10, 21, 25, 163, 195, 202.

**Medallion.** A medal. In architecture a tablet bearing objects in relief applied to the exterior of a building.

**Medieval** (mē-di-ē'-val). Pertaining to, or characteristic of the Middle Ages.

**Metope.** A panel or tablet of stone, usually square, sometimes oblong, placed at regular intervals along the frieze and divided by triglyphs, generally decorated with designs or groups of figures. Greek, see page 44.

**Molding.** A molded surface running along continuously in buildings so as to make lines and contours in lights and shadows, as on cornices, string-courses, window jambs, etc. Common forms are the ball-flower, dog-tooth, canetto, ovolo, etc. See pages 39, 40, 97, 131, 145, 149, 164.

**Monolith.** In one piece of stone—usually a column. See page 44.

**Mosque.** A Mohammedan place of worship. It contains a fountain for bathing, and besides its dome or domes, has a minaret to call the faithful to prayers. See pages 87, 92.

**Mosaic.** A picture made of small pieces of colored glass or stone or marble. These are set in cement against a wall or dome or other surface to be decorated. Very durable and at a distance cannot be distinguished from a painting. See pages 73, 74, 80, 82, 83, 97.

**Mullion.** The vertical bars dividing a window into separate parts.

**Mutule.** Primarily any projection from the surface of a wall; used especially to describe the square block, like the end of a beam,

appearing at regular distances above the frieze of a Doric building.

Nave. The central portion of a church. See pages 12, 16, 101, 102, 131, 146, 147.

Octagonal. Having eight equal angles and eight equal sides.

Order. The whole design of a column and entablature. See illustrations and descriptions, pages 35 to 38.

Ovolo. Any egg-shaped molding.

Pagoda. A Chinese or Japanese temple consisting of many stories, each having its own up-curved roof. See page 269.

Parapet. A low wall, breast high only, on the edge of a tower or gallery. See pages 113, 115, 116.

Pavilion. A building, isolated, but properly in relation to a larger or principal structure, as the pavilions of the Louvre. See page 190.

Pedestal. The base of a pillar. That which serves as a support.

Pediment. The low triangular end or finish of a portico resembling a gable, in Greek temples. See pages 43, 103.

Pentelic. Pertaining to Mount Pentelicus, a mountain near Athens: particular as to its fine marble, of which it contained almost inexhaustible quantities.

Peristylum. The interior of a building surrounded by columns, as in the Greek temples.

Perspective. In perspective, that is, seen according to the laws of perspective. Perspective is discussed in "Famous Pictures," pages 180, 182.

Piazza. Italian pronunciation (piat'-sa). An open square in a town, surrounded by buildings.

Pier. The vertical erection from which an arch springs. See page 53.

Pilaster. A vertical projection from a wall built out in imitation of a column, but flat and rectangular; it is part of the wall.

Pillar. A column or columnar mass, often clustered. See Column.

Pinnacle. Any relatively small structure that rises above a roof or caps a buttress. See pages 130, 138.

Plate. A beam or piece of timber laid horizontally in a wall to receive the ends of other timbers.

Plinth. Masonry at the base of a column which connects it with the ground.

Porch. An exterior addition to a building forming a covered approach to a doorway.

Portico. The colonnaded space in front of the entrance door of a classic temple, or other building. More important than porch.

Portal. An entrance, particularly of a great or splendid building. See picture of Notre Dame, page 122.

Portcullis. A strong grating made to slide in grooves to protect the entrance of a fortified castle.

Posticum. Space behind the cella in a Greek temple.

**Propylon.** A monumental gateway, especially Egyptian. See page 27.

**Pronaos.** The vestibule of a Greek temple.

**Proportion.** The relation of one part to another, or to the whole, with respect to magnitude. Symmetrical arrangement or distribution. See pages 25, 39, 41, 72.

**Prostyle.** Porch supported by a row of columns, open on three sides and surmounted by pediment.

**Pylon.** A monumental gateway to an Egyptian temple.

**Rafters.** Sloping beams supporting the upper part of a roof.

**Recess.** A receding space, a niche, or alcove, as a recess in a wall.

**Reticulated.** Latticed, like the meshes of a net.

**Ribs.** In vaulting, a sculptured arch supporting a vault. See pages 17, 168.

**Rococo.** See baroque, and pages 18, 19, 165, 202.

**Rotunda.** A circular hall in a large building, generally surmounted by a dome.

**Rood-screen.** Properly an open gallery placed immediately above the chancel screen of a church, in which the Holy Rood or Cross was displayed: but also used of a chancel screen when surmounted by a cross.

**Scroll.** Any ornament of a spiral form.

**Shaft.** The body of a column between the base and the capital.

**Sill.** A stone or piece of timber upon which a structure rests, as the sills of a house, or the sill of a door.

**Soffit.** The flat surface on the lower or under side of an arch or cornice.

**Spandrel.** The triangular surface-space between the spring of an arch and its square frame. See page 69.

**Spire.** The high pointed termination of a tower. See pages 82, 131, 146, 155.

**Stall.** One of a range of fixed seats inclosed either wholly or in part at the back and sides in the choir or chancel of a church, often richly sculptured.

**Steeple.** A lofty structure attached to a church or public edifice. Usually contains bells and surmounted by a spire.

**String-course.** A molding run horizontally along a wall to mark a division of stories or design in a building.

**Structure.** A building of any kind. Also the mode of building, arrangement of parts and elements. See pages 21, 22, 53, 71, 138, 161, 162, 212.

**Stucco.** Cement or plaster used as a coating for walls. Also work made of stucco. The ornamenting with garlands and festoons of stucco for exteriors was very elaborate in the times of the Romans and with the Italians in the fifteenth century.

**Super-structure.** Any structure built on something else, particularly an edifice with reference to its foundation.

**Symmetry.** The exact repetition of one-half of any structure by the other half with the parts arranged in reverse order. See pages 25, 139.

Texture. The surface quality of objects. See pages 87, 88, 89, 163.

Thrust. The stress which acts between two contiguous bodies when each pushes the other from itself. See pages 65, 128, 129.

Tile. A thin slab of baked clay used for covering roofs, or a slab of pottery or porcelain usually glazed and ornamented and used for pavements, walls or decorations.

Tracery. The stone which frames into the top part of a Gothic or other window. Any permanent open work built into the head of a window. See pages 130, 131, 147.

Transept. A transverse nave crossing the central nave from north to south. See pages 96, 139.

Triforium. An open arcaded gallery of arches running immediately beneath the clerestory, and above the pillars of the nave. Gothic.

Triglyphs. Triple upright grooves channeled in the spaces between the metopes, and together with these, forming the frieze.

Truss. A method of framing timber or iron. A combination of timber, iron or steel so arranged as to constitute an unyielding frame.

Turret. A small tower rising from or otherwise connected with a larger building.

Tympanum. The triangular space in a gable end, or at the head of an arch.

Vault. Any masonry built arched roof, the materials of which mutually support and sustain themselves upon their abutments. See pages 58, 65, 95, 96, 99, 109, 130, 138.

Vaulting. Vaulted work. See perspective of vaulting on page 141.

Veneer. A thin coating covering a wall or other body. See pages 79, 80, 83.

Vermicular. Marked with worm-like lines. See page 191.

Villa. A country seat; properly one of some size.

Void. An unoccupied space.

Volute. A spiral scroll; especially the characteristic ornament of an Ionic capital. See page 37.

Wagon-vault. A semicylindrical vault, or barrel vault.

Wheel-window. A large circular window with tracery radiating from the center. Practically the same as rose-window although a wheel window usually has the spokes more or less suggested. See pages 135, 139.

## TABLE OF BUILDINGS

The following table is compiled chiefly from information furnished by Superintendents of Schools or City Architects. After reading about some of the world's great buildings and about the different styles of Architecture, we ought to visit the best examples in our own vicinity. In general these buildings do not represent a style in its purity, but combine features of one or more. To analyze the buildings of our own city in the light of what we have learned is a pleasant lesson and will prepare us the better to enjoy the world's finest architecture when we come to see it. If you will take out your camera and go on a hunt for bits of architecture, you will be surprised and pleased at the results. Choice bits of carving, columns, capitals and detail are to be found in all our cities, and the pictures will be something to keep, and often well worth enlarging and framing.

### BALTIMORE

**Egyptian:** The Battle Monument (Egyptian detail, marble), Gateway to Westminster Presbyterian Church which opens into cemetery where Edgar Allan Poe is buried. **Greek:** The Savings Bank of Baltimore (white marble), McKim School. **Romanesque:** St. Mark's Lutheran Church, First Methodist Episcopal Church. **Gothic:** First Presbyterian Church. **Saracenic:** Maryland Casualty Building (mixture). **Colonial:** Homewood (Charles Street extended and University Parkway—brick and stone).

### BOSTON

**Egyptian:** Gateway Mt. Auburn, Cambridge; Granary Burying Ground, Boston. **Greek:** Suffolk Bank Scollay Square Base; Custom House, State Street (both Doric). **Roman:** Fenway façade of Evans Galleries, Museum of Fine Arts. **Byzantine:** Synagogue. **Romanesque:** Old Law School, Cambridge; Sever Hall; Trinity Church, Boston (Richardson Architect). **Gothic:** Central Church, Berkely and Newbury Streets; All Saints' Church, Brookline. **Renaissance:** Public Library, (McKim), (French), Church, Audubon Circle (English), Tremont Temple (Venetian). **Colonial:** Old State House, Interior King's Chapel, Present State House, Park Street Church, Wilbur Theater (Georgian). **Saracenic:** Interior Tremont Temple, many doorways on Chestnut Street.



## CHICAGO

**Roman:** Art Institute (Bedford stone). **Greek:** Art Palace, Jackson Park (stucco on brick); Present Field Museum. **Romanesque:** Newberry Library (light granite). **Gothic:** Harper Memorial, University of Chicago. **Renaissance:** Harold McCormick residence at Lake Forest (Italian, stucco on brick). **Saracenic:** Medina Temple at Jackson and Fifth Streets (office building, Moorish detail in terra cotta). **Colonial:** Kenwood Club (brick).

## CINCINNATI

**Roman:** Israel Temple (Avondale), Soldiers and Sailors Memorial Building, Elm Street (Rock castle stone). **Greek:** Schmidlapp Memorial; Sculpture Hall in connection with the Art Museum, Eden Park (Bedford stone); Old Lafayette-Franklin Bank. **Romanesque:** Building at entrance to Spring Grove Cemetery (limestone with sandstone trimmings), City Hall, Y. M. C. A. Building. **Gothic:** St. Francis de Sales' Church; Walnut Hills Scottish Rite Temple; St. Xavier's Church; St. Mary's Church, Covington; Dexter Chapel. **Renaissance:** Guilford Public School (Italian), Business Men's Club (Venetian), Union Central Life Insurance Building (skyscraper adaptation). **Saracenic:** Jewish Temple at Eighth and Plum Streets (brick and stone). **Colonial:** Charles P. Taft residence (wood), Women's Club (brick and stone), Avondale Athletic Club. **Byzantine:** Herbivora Building at the Zoölogical Gardens (concrete).

## CLEVELAND

**Egyptian:** The County Morgue. **Roman:** Post Office and City Hall. **Neo-Roman:** County Court House, First National Bank, Cleveland Trust Co. Building. **Greek:** Andrew's Mausoleum, Brook's Mausoleum, Wade Memorial Chapel, Hanna Memorial. **Gothic:** Trinity Cathedral, Euclid Avenue Presbyterian Church. **Renaissance:** Union Club, Leader Building. **Saracenic:** Euclid Avenue Temple.

## COLUMBUS

**Greek:** State Capitol Building (Doric). **Renaissance:** Carnegie Library (marble).

## DENVER

**Roman:** The Public Library (sandstone, Corinthian). **Greek:** The new Post Office and United States Court Building (modified Ionic—marble). **Romanesque:** East Side High School. **Gothic:** Roman Catholic Cathedral. **Saracenic:** El Jebel Temple. **Colonial:** The Denver Country Club.

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## DETROIT

**Roman:** Detroit Fire and Marine Insurance Co. Building (modern adaptation of Roman motives and detail). **Greek:** Mausoleum in Woodlawn Cemetery for F. J. Hecker (Grecian Ionic, white marble). **Romanesque:** Bits of Masonic Temple, Lafayette Avenue (Italian). **Gothic:** St. Paul's Cathedral; Fort Street Presbyterian Church (English perpendicular); Mortuary Chapel, Woodlawn. **Renaissance:** People's State Bank (Italian, white marble). **Colonial:** R. A. Alger's house, Grosse Pointe Farms (English-Georgian), University Club.

## HARTFORD

**Greek:** State Library and Supreme Court Building. **Gothic:** St. Joseph's Cathedral; Christ Church; Wadsworth Atheneum (Tudor). **Renaissance:** State Capitol; Morgan Memorial Art Gallery. **Colonial:** New Municipal Building.

## INDIANAPOLIS

**Roman:** The Federal Building (stone). **Greek:** Portico of Asylum for the Blind, The Masonic Temple (Greco-Roman, stone). **Gothic:** Christ Episcopal Church (English-Gothic, stone), St. Mary's Church (compare with Cologne Cathedral). **Renaissance:** Old Fletcher American Bank Building, The Deutsche Haus (east half is good German renaissance). **Colonial:** House of Meredith Nicholson.

## KANSAS CITY

**Egyptian:** Stine Undertaking Co.'s Building (exterior of terra cotta, good example). **Roman:** New Union Station (stone, style somewhat modified). **Greek:** Temple B'nai Jehudah (stone, good example). **Romanesque:** Trinity Episcopal Church (stone, style mixed with Byzantine). **Gothic:** First Congregational Church (stone, English Gothic). **Renaissance:** Public Library (stone, good example of Italian renaissance). **Colonial:** Residence 3538 Gillham Road (red brick, good example).

## LOUISVILLE

**Roman:** Jewish Synagogue. **Greek:** Southern National Bank Building (while this is a small building, it is of more than ordinary merit). **Romanesque:** Library of the Baptist Seminary (poor example). **Gothic:** St. Paul's Cathedral (mixed). **Renaissance:** Presbyterian Theological Seminary (beautiful example of English). **Colonial:** Residence of Mr. Wilson Cochran, Douglas Boulevard.

## LOS ANGELES

**Roman:** Lincoln High School is Roman Doric in general design, Aragon Avenue School is of the Tuscan order. **Greek:**

**Santa Barbara Avenue School.** **Renaissance:** Malabar Street School is taken somewhat from the brick architecture of the Italian Renaissance; Boyle Heights Intermediate School is Lombard-Italian style; the H. W. Hellman Building, Fourth and Spring Streets, is of the architecture of the Renaissance period. (Due to 150-ft. sky line restrictions, the architecture of the largest office buildings has become an almost distinctive style, which could be called a modern adaptation of the old Classical architecture, with an occasional attempt at Renaissance; there are no very pure examples of the architecture of either of these periods.) **Saracenic:** Temple of B'nai B'rith, Ninth and Hope Streets; Ocean Park Bath House, Ocean Park, Cal. **Gothic:** First Congregational Church, Hall of Records (not pure). **Notes:** Manual Arts High School is copied somewhat from the Old Mexican style of architecture, or, it could be called "Southern California" style,—no pure style. The Virgil Avenue School is taken from the old Spanish brick and plaster architecture (no pure style). Western Avenue School is rather of the Art Nouveau. Wadsworth Avenue School is Spanish Mission style.

#### MILWAUKEE

**Greek:** Marshall and Isley Bank Building (stone and marble); Layton Art Gallery (stone and marble). **Gothic:** Unitarian Church (brick); St. James' Episcopal Church (brick). **Renaissance:** Milwaukee Public Library and Museum (stone and marble).

#### MINNEAPOLIS

**Gothic:** St. Mark's Church. **Renaissance:** Alice Shevlin Hall, University of Minnesota; New Art Gallery. **Colonial:** L. H. Farrington Residence; E. L. Carpenter Residence.

#### NEWARK

**Roman:** Mutual Benefit Life Insurance Co. (home office building, white marble). **Romanesque:** Prudential Life Insurance Company (home office buildings, limestone). **Collegiate Gothic:** Newark Normal School (variegated red brick and light gray terra cotta). **Gothic:** High Street Presbyterian Church (brown stone). **Italian Renaissance:** National State Bank Building (cream colored, semi-glazed, terra cotta). **Colonial:** No public buildings, but several good examples among private houses. The First Presbyterian Church, Trinity Church, (both brown stone). **Georgian:** Cleveland Grammar school (red brick and gray terra cotta).

#### NEW ORLEANS

**Egyptian:** U. S. Custom House (not decidedly Egyptian). **Roman:** Main Library (good example of Roman Corinthian). **Greek:** City Hall (Grecian Ionic). **Romanesque:** Howard Li-

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brary (H. H. Richardson, Architect). **Gothic:** Loyola College (Collegiate Gothic). **Renaissance:** U. S. Post Office (Italian). **Saracenic:** Jesuit Church (Moorish Architecture). **Colonial:** Cabildo (Spanish Colonial).

## NEW YORK CITY

**Roman:** Knickerbocker Trust Company's Building; Madison Square Presbyterian Church (Corinthian); Pennsylvania R. R. Station (Neo-Roman). **Byzantine:** Unitarian Church at Fourth Avenue and Twentieth Street. **Saracenic:** Temple Emanuel, Fifth Avenue; Interior Casino Theater. **Romanesque:** St. Bartholomew's Church (carved frieze and bronze doors); Paulist Fathers' Church. **Gothic:** St. Patrick's Cathedral; St. Thomas's Church, Fifth Avenue (French); Residence of W. K. Vanderbilt (sixteenth century Gothic). **Renaissance:** N. Y. Herald Building (Italian); Tiffany's Building on Fifth Avenue (Palladian); University Club, Fifth Avenue and Fifty-fourth Street (Florentine); Public Library (Louis XVI style); Branch Library, No. 29 (Florentine); Schwab Residence on Riverside Drive (French Château). **Colonial:** Jumel Mansion.

## PITTSBURGH

**Roman:** Bank of Pittsburgh (Fourth Avenue). **Romanesque:** Masonic Hall (except first story). **Byzantine:** Epiphany Church. **Romanesque:** Court House (very good). **Gothic:** Calvary Church, St. Peter's Church, Trinity Church.

## PROVIDENCE

**Greek:** Manning Hall, Brown University. **Romanesque:** Central Baptist Church (Italian type); Gymnasium Brown University (French type). **Gothic:** Grace Church; St. Stephen's Church. **Renaissance:** Rhode Island State House. **Colonial:** Spire of First Baptist Church, designed by James Gibbs, one of the best Georgian spires in America.

## RICHMOND, VA.

**Egyptian:** Medical College of Virginia, corner Thirteenth and Marshall Streets. **Roman:** Cathedral, Laurel and Park Avenue. **Greek:** First Baptist Church, Twelfth and Broad Streets. **Romanesque:** Included this with the Roman. **Gothic:** Second Baptist Church, Adams and Franklin Streets. **Renaissance:** Scott Residence, 909 West Franklin; Baskerville Residence, Boulevard and Beverly Street. **Colonial:** St. John's Church, Twenty-fourth and Broad Streets.

## SALT LAKE CITY

**Gothic:** First Presbyterian Church and St. Mary's (Catholic) Cathedral. (Neither is pure Gothic.) **Renaissance:** Federal

(Post Office) Building (good example stone). **Colonial:** Beehive House.

### SAN FRANCISCO

**Egyptian:** Museum in the Golden Gate Park (in its massive ness, sloping walls, columns and decorative features, but no in material). **Roman:** Central portion of the United States Min is a good reproduction of the exterior of a Roman Doric Temple. **Romanesque:** The Catholic St. Mary's Cathedral. Also the portal and many decorative features of the Mills Building. **Gothic:** The Episcopal Cathedral (just begun); First Unitarian and St. Paul's Churches. **Renaissance:** The Claus Spreckel's Residence (French); Scottish Rite Temple (Italian); The German House. **Chinese:** Chinese Telephone Offices, a small reproduction of a Chinese temple. **Colonial:** The two Lilienthal Residences, corner of Gough and California Streets. **Japanese:** Entrance, private house, and Tea House of the Golden Gate Park Japanese Tea Garden.

### SEATTLE

**Greek:** American Savings Bank Building. **Romanesque:** Mutual Life Building; New York Block. **Gothic:** Trinity Church; First Baptist Church; Henry Memorial Church. **Renaissance:** Seattle Public Library; United States Post Office Building; Roman Catholic Cathedral; Franklin High School. **Colonial:** Robinson Apartments; Plymouth Church; L. D. Lewis Residence; Brownell Residence.

### SYRACUSE

**Roman:** Central High School; County Court House; Syracuse University Gymnasium (Pseudo-Classic). **Romanesque:** Crouse College, Syracuse University (Richardson). **Gothic:** St. John the Evangelist Church; First Presbyterian Church (Tudor Gothic). **Colonial:** Leavenworth Homestead.

### PHILADELPHIA

**Egyptian:** Moyamensing Prison. **Roman:** Girard Trust Building (Greco-Roman). **Greek:** Girard College, Custom House. **Romanesque:** University Museum. **Gothic:** St. Mark's (English); Church of the Advocate (French). **Renaissance:** Horticultural Hall, Broad above Spruce. **Saracenic:** Lulu Temple. **Colonial:** Carpenters' Hall, Independence Hall.

### WASHINGTON

**Greek:** U. S. Patent Office (Doric); Treasury (Ionic). **Romanesque:** Church of the Covenant (by Richardson). **Gothic:** Church of the Ascension, 12th and Mass. Ave. **Renaissance:** Public Library (Italian). **Colonial:** D. A. R. Hall, 17th St., Mt. Vernon.

## INDEX

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